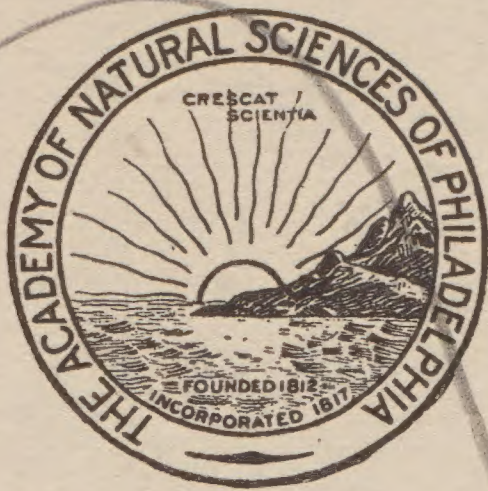


899.

Family Stomiidae

Body very low, elongate and tapering, compressed. Head oblong. Snout short, rounded. Eye variably large or small, far advanced. Mouth very large, with deep lateral cleft. Lower jaw and hyoid arch joined by membrane forming mouth floor. Pair of relatively short muscles connects mandibular symphysis with ceratohyals. Lateral edge of upper jaw formed by maxillary, toothed. Teeth usually strong, unequal, some often fang like or barbed. Long barbel at throat. Opercles imperfect. Gill membranes not united, free from isthmus. No pseudobranchiae. Branchiostegals 12 to 17. Skeleton feebly ossified.

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OF PHILADELPHIA



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LOGAN SQUARE
PHILADELPHIA, PA.

Stomach coecal. No pyloric appendages.

Eggs excluded through oviducts.

Body naked or covered with thin deciduous scales. Luminous organs in separated series; opercular, subocular or postocular may bodies may occur, or some between branchiostegal rays; on body complete ^{row} double of photophores from isthmus to caudal and shorter lateral row each side of less extent.

Dorsal short or long, median or posterior, inserted before or behind ventrals. Anal long or short, like

dorsal ends short space from caudal.
Caudal forked, lobes often unequal.
Pectorals low, or absent. Ventrals
well developed to long, mostly
postmedian.

A large family of luminous
deep sea fishes, remarkable
chiefly for their enormous fangs
and very distensible stomachs, which
enable them to swallow fishes larger
than themselves. They have recently
been the subject of an exhaustive
study by Regan and Trewavas,

whose definitions are largely accepted in this report. The barbel attached to the under surface of the head is the principal organ used pointing out specific distinctions. Its extreme and varied modifications are almost endless, though functioning perhaps as sensory or tactile, or even as a lure.

The following are larval forms:

Genus Stylophthalmus Brauer

Stylophthalmus Brauer, Zool. Anzeiger,
vol. 25, 1902, p. 298. Type Stylophthalmus
paradoxus Brauer, monotypic.

Body elongate. Head depressed.
Snout long, strongly depressed,
broadly rounded. Eyes in very
young on long immovable cartilaginous
stalks, reduced with age. Lower
jaw prominent, articular end
angularly conspicuous. Teeth in
jaws minute, sharp. Body
scaleless. Ventral series of
luminous organs along body.
Dorsal origin before vertical
through vent, nearly or not
opposite anal. Caudal forked
or rounded. Pectorals short,

nostril or eye, expansion 2 to 2 1/5 in eye, length 2 2/3 to 2 4/5; 4 canines above, 6 below, rather small or moderate molars in 2 series in each jaw; interorbital 3 3/5 to 4, moderately convex; narrowest preorbital width less than or nearly equals eye. Gill rakers 2 to 7 + 10 or 11, short tubercles, pointed, 1/3 to 1/2 of gill filaments, which 1 2/5 to 2 in eye.

Scales 54 to 57 in lateral line to caudal base and 3 to 10 more on latter; 9 or 10 above, 13 to 17 below, 35 to 46 forward opposite front eye edge, 7 or 8 rows on cheek to preopercle ridge, none on flange. Scales with 7 to 9 basal radiating striae, edge scalloped; 65 to 115 apical denticles, with 8 to 20 transverse series of disconnected basal elements; circuli very fine.

D. XII, 10, I, first spine 2 1/10 to 2 1/2

904

rather broad. No ventrals. Vent
on papilla, near anal. Colorless,
except for presence of lateral row
of chromatophores.

Minute, larval stomiatids.

Stylophthalmus braueri Weber

Stylophthalmus braueri Weber, Siboga
Exped., vol. 57, Fische, 1913, p. 16, figs.

1-2. North of Salomakie, Hammar Island;

Banda Sea, in 750 meters. — Weber and

Beaufort, Fishes Indo Austral. Archipelago,
vol. 2, 1913, p. 138, figs. 51-52 (types).

Stylophthalmus paradoxus Brauer

Stylophthalmus paradoxus Brauer,

Zool. Anzeiger, vol. 25, 1902, p. 298. South
of Cape Colony, Antarctic Sea, Indian
Ocean; Deutsch. Tiefsee Exped. Valdivia,
vol. 5, Tiefsee - Fische, 1906, p. 67, pl. 5,
figs. 1-7 (west coast South Africa, south
of Cape Colony, Antarctic Sea east of
Bouvet Island, Bay of Bengal, between
Ceylon and Maldives, between Ceylon
and Zanzibar, in 1500 to 4000 meters).

— Beebe, Zoologica N. Y. Zool. Soc., vol. 12, no. 1,
April 30, 1929, p. 9 (N. $39^{\circ}15'$ W. 72° ,
600 fathoms, 125 miles south east of New
York).

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Analysis of genera

a. Scales present; premaxillary free from maxillary.
 b.¹ Depth $7\frac{1}{2}$ to 13. Stomias.
 b.² Depth 18. Macrostomias.
a.² no scales.

c. Pectoral arch attached to skull by posttemporal bone; parietals present; teeth fixed, with long palatine series; dorsal and anal subequal.

d. Postocular organ large; an adipose fin. Elapterostomias.
d.¹ Postocular organ minute; an adipose fin. Chirostomias.
d.² Postocular organ very large; no adipose fin. Trigonolampa.

c.² Pectoral arch without posttemporal; parietals present; lower jaw with strong fixed fang anteriorly and 1 depressible tooth behind; second upper tooth long fang; pair of teeth on vomer; 0-2 teeth on each palatine.

e. Second premaxillary tooth fixed in adult.

f. no isolated pectoral ray; fangs of lower jaw not penetrating

9098
premaxillaries when mouth closes.

f.² An isolated and produced pectoral ray. Odontostomias.

g.¹ Anal origin below dorsal origin.

g.² Anal origin before dorsal origin. Apotomias.

g.² Anal origin before dorsal origin. Flagellotomias.

e.² Second premaxillary tooth depressible.

h.¹ An isolated and produced pectoral ray; anal origin before dorsal origin.

h.² No isolated pectoral ray; anal origin nearly below dorsal origin. Thysanactis.

h.² No isolated pectoral ray; anal origin nearly below dorsal origin. Leptostomias.

e.³ No posttemporals; parietals absent.

i.¹ Vomer toothless.

j.¹ Dorsal and anal subequal; upper jaw not protractile; teeth on palatines.

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h.¹ First lower tooth fixed, followed by 1 or 2 smaller outer fixed teeth and series of depressible teeth.

h.¹ Front fangs long; ventral fins ventral; no luminous lateral loop. Grammatostomias.

h.^{2nd} Front fangs long; ventral fins ventral; closed loop of luminous tissue on each side of front part of body. Lamprotopus.

h.³ Fangs small; ventral fins lateral. Bathophilus.

h.² Teeth small, fixed; 2 luminous bodies below eye. Pachystomias.

j.² Anal longer than dorsal; upper jaw protractile.

m.¹ Palatines toothless. Eustomias.

m.² Palatines with 3 groups of short teeth. Microdentostomias.

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i.² Pair of teeth on vomer; premaxillary and mandibular fangs all depressible.

m.¹ Teeth without or with rudimentary cusp; dorsal and anal subequal.

o.¹ Five small teeth on each palatine. Hoplostomias.

o.¹ Two or 3 small teeth on each palatine. Pseudostomias.

n.² Teeth bicuspid; dorsal and anal subequal.

p.¹ Mouth cleft straight.

q.¹ No isolated pectoral ray. Melanostomias.

q.² An isolated produced pectoral ray. Echiostoma.

p.² Mouth cleft curved, lower jaw prominent. Photichthys.

m.³ Teeth bicuspid; dorsal longer than anal; body very elongate. Idiacanthus.

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Genus Stomias Oken

Stomias Oken, Isis, 1817, p. 1182. (On
Stomias Cuvier, Règne Animal, vol. 2, 1817,
p. 184. Type Esox boa Risso, monotypic.)

Body elongate, compressed. Head
compressed. Snout very short. Eye
moderate. Mouth cleft extremely
large, oblique, lower jaw projects.
Teeth pointed, unequal, very large
on premaxillaries and mandible,
fine on maxillaries. Vomer with
pair of fangs. Palatines and tongue
with smaller pointed teeth. Opercular
region short. Gill openings very wide.
No pyloric appendages. Body covered

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with exceedingly fine deciduous scales, scarcely imbricated, in subhexagonal depressions in skin. Lower side of body, head and tail with series of photophores. Dorsal rather long, far postmedian, opposite anal. Caudal moderate. Paired fins rather small, short, latter far postmedian.

The following imperfectly described and doubtful:

Stomias variegatus Lesson

Stomias variegatus Lesson, Voy. Coquille,
Zool., vol. 2, pt. 1, 1830, p. 142. Baie
Solédad, aux îles Malouines. —

Fowler, Mem. Bishop Mus., vol. 10,
1928, p. 33 (copied).

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Analysis of species

a.' Premaxillaries with 4 to 7 teeth, larger or equal-dentary teeth.

b.' Ventral row of photophores 42 to 47 between pectoral and ventral, 5 to 6 between ventral and anal.

affinis.

b.² Ventral row of photophores 39 to 51 between pectoral and ventral, 8 to 12 between ventral and anal; scales less than 80.

d.' Depth $9\frac{3}{4}$ to 13; head 7 to 11.5.

e.' A. 21 to 24; scales 65 to 67; ventral

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photophores 39 to 51 between pectoral and ventral, 8 to 11 between ventral and anal, 14 or 15 from anal origin to caudal. colubrinus.

e.² A. 18 or 19; scales 75; ventral photophores 41 to 45 between pectoral and ventral, 9 to 12 between ventral and anal, 14 to 16 from anal origin to caudal. atriventer.

e.³ A. 21 or 22; scales 73 to 78; ventral photophores 46 to 51 between pectoral and ventral, 10 to 13 between ventral and anal, 15 to 18 between anal origin and caudal.

f.¹ Barbel with thick spindle shaped stem; only 2 terminal tentacles. fusus.

f.² Barbel with slender stem; 3 terminal tentacles. boa.

d.² Depth 8; head $6\frac{1}{4}$; A. 23 or 24; ventral photophores 39 between pectoral and

ventral, 9 between ventral and anal.

hexagonatus.

b.³ Ventral photophores 33 to 35 between pectoral and ventral, 12 or 13 between ventral and anal; depth 9 to 10; head 8 to $9\frac{1}{2}$; A. 19 or 20.

brevibarbatulus.

b.⁴ Ventral photophores 54 between pectoral and ventral, 14 between ventral and anal; depth $12\frac{1}{2}$; head $9\frac{1}{3}$; A. 18.

gracilis.

a.² Premaxillary teeth more numerous and conspicuously smaller than those of dentaries.

nebulosus.

Stomias affinis Günther

Stomias affinis Günther, Rep. Voy.

Challenger, vol. 22, 1887, p. 205, pl. 54,
fig. A. South of Sombbrero, 450 fathoms.

— Goode and Bean, Oceanic Ichth., 1895,
p. 108, pl. 34, fig. 129 (copied). — Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1,
1896, p. 588 (copied). — Brauer, Deutsch.

— Garman, Mem. Mus. Comp. Zool., vol. 24,
1899, p. 275 (diagnosis).

Gulf of Aden). — Pappenheim, Deutsch.

Südpolar Exped., vol. 15, pt. 2, 1914, p. 169

(N. $0^{\circ} 29' W.$ $18^{\circ} 57'$, 10 meters; N. $0^{\circ} 12' W.$ 16°

$39'$, 10 meters). — Horman, Discovery Rep.,

vol. 2, 1930, p. 315 (S. $5^{\circ} 54' E.$ $11^{\circ} 19'$, 150 meters;

Stomias affinis Günther

Stomias affinis Günther, Rep. Voy.

Challenger, vol. 22, 1887, p. 205, pl. 54,
fig. A. South of Sombbrero, 450 fathoms.

— Goode and Bean, Oceanic Ichth., 1895,
p. 108, pl. 34, fig. 129 (copied). — Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1,
1896, p. 588 (copied). — Brauer, Deutsch.

Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische,
1906, p. 51 (N. $13^{\circ} 2' 8''$ E. $46^{\circ} 41' 8''$, 1200 meters,
Gulf of Aden). — Pappenheim, Deutsch.

Südpolar Exped., vol. 15, pt. 2, 1914, p. 169
(N. $0^{\circ} 29' W.$ $18^{\circ} 57'$, 10 meters; N. $0^{\circ} 12' W.$ 16°

$39'$, 10 meters). — Norman, Discovery Rep.,

vol. 2, 1930, p. 315 (S. $5^{\circ} 54' E.$ $11^{\circ} 19'$, 150 meters;

S. $00^{\circ}36'E$, $8^{\circ}28'$, 100 to 200 meters; S. $1^{\circ}11'$
 E , $5^{\circ}38'$, 300 meters; types of Stomias
affinis and Stomias elongatus).

~~Stomias elongatus~~ ^{Wood Mason and} ~~Alcock~~

Stomias elongatus Alcock, Ann. Mag. Nat. Hist., London, ser. 6, vol. 8, 1891, p. 127.

N. $8^{\circ}23'E$. $75^{\circ}47'$, 738 fathoms, Laccadive Sea. — Goode and Bean, Oceanic Ichth., 1895, p. 108 (reference). — Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 333 (reference); Cat. Deep Sea Fishes Indian Museum, 1899, p. 147 (type). — Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 275 (diagnosis). — Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Det. 1931, p. 8 (note).

~~Stomias valdiviae~~

Stomias valdiviae Brauer, Deutsch.

Tiefsee Exped. Valdivia, vol. 15,

Tiefsee-Fische, 1906, p. 48, text figs.

11-12, pl. 3, fig. 1. Atlantic Ocean, West

coast of Africa, Gulf of Guinea, ^{in 600 to 2200 meters} Indian

Ocean off Sumatra and Sokotra,

594 to 5064 meters. — Weber and

Beaufort, Fishes Indo Austral.

Archipelago, vol. 2, 1913, p. 112 (compiled).

— Beebe, Zoologica N. Y. Zool. Soc., vol. 12, no. 1,
April 30, 1929, p. 8 (N. $39^{\circ} 15'$ W. 72° , 700 fathoms).

— Collette, vol. 2, art. 4, Oct. 1931, p. 8 (diagnosis
in key).

— Ege, Rep. Danish Oceanogr. Exped. Medit,

no. 4, vol. A. 4, Feb. 28, 1918, p. 23 (N. $15^{\circ} 30'$ W.
 $23^{\circ} 52'$, 133 meters).

~~Stomias valdiviae~~

Stomias valdiviae Brauer, Deutsch.

Tiefsee Exped. Valdivia, vol. 15,

Tiefsee-Fische, 1906, p. 48, text figs.

11-12, pl. 3, fig. 1. Atlantic Ocean, West
coast of Africa, Gulf of Guinea, ^{in 600 to 2200 meters} Indian
Ocean off Sumatra and Sokotra,

594 to 5064 meters. — Weber and

Beaufort, Fishes Indo Austral.

Archipelago, vol. 2, 1913, p. 112 (compiled).

— Parr, Bull. Bingham Oceanogr.

Collection, vol. 2, art. 4, Oct. 1931, p. 8 (diagnosis
in key).

— Ege, Rep. Danish Oceanogr. Exped. Medit,

no. 4, vol. A. 4, Feb. 28, 1918, p. 23 (N. 15° 30' W.
23° 52', 133 meters).

Archipelago,

Barro, 13

collection, vol.

2

10

9 3/4

12

9 4/5

8

9 3/5

7

11
7 3/4

8 2

Genus Stomias Oken

Stomias Oken, Isis, 1817, p. 1182 (on Cuvier,
Règne Animal, vol. 2, 1817, p. 184). Type
Eux boa Risso, monotypic.

Depth $9\frac{1}{2}$; head $8\frac{1}{5}$, width $2\frac{3}{5}$.

Snout 5 in head from snout tip; eye 4, greater than snout, $1\frac{1}{8}$ in interorbital; maxillary reaches hind preopercle edge, length about equals head from snout tip; interorbital 3, slightly convex. Gill rakers about 10 short denticles on lower branch of first arch; gill filaments $1\frac{3}{4}$ in eye.

Barbel very slightly less than head, with terminal bulb ending in 3 filaments, subequal, or longest about equals $1\frac{1}{2}$ eye diameters; Large rounded luminous body

little less than pupil below
hind portion of eye close above
upper maxillary edge; upper lateral
series ^{of photophores} 4³ between pectoral and ventral,
7 between ventral and anal; lower
or ventral series 56 before ventral, of
which 12 on isthmus or before pectoral
origin, 6 between ventral and anal,
then 17 to caudal base.

D. 15, fin height 2 in total
head length; A. 20, fin height
 $1\frac{7}{8}$; caudal $2\frac{1}{4}$?, small, forked.
apparently with lower lobe longer;
least depth of caudal peduncle $1\frac{1}{2}$
in eye; pectoral $1\frac{1}{4}$ in total head,

rays 7; ventral 1, rays 5.

Dusky brown, under surface of body more or less blackish. Iris neutral gray. Fins whitish.

Atlantic and Indian Oceans.

83830 U.S.N.M. N. $32^{\circ}39'$ W. $77^{\circ}1'$.

May 6, 1886. Albatross Station 2676.

Length 110 mm.

Stomias colubrinus Garman

Stomias colubrinus Garman, Mem.

Mus. Comp. Zool., vol. 24, 1899, p. 275,

pl. 57, fig. 1. N. $6^{\circ}17'$ W. $82^{\circ}5'$ 1672 fathoms.

— Brauer, Deutsch. Tiefsee Exped. Valdivia,

vol. 15, Tiefsee-Fische, 1906, p. 47, fig. 10

(luminous organs) (N. 1° to 14° to S. 3° to 11°

W. 2° to 21° to E. 0° to 10° , 1500 to 3500 meters).

— Ege, Rep. Danish Dana Exped. Med., No. 4,
vol. 2, A. 4, 1918, p. 24 (N. $13^{\circ}44'$ W. $24^{\circ}45'$).

5° to 10° , 110 to 1100 meters).

Depth 10; head $7\frac{3}{5}$. Snout 7 in head from snout tip; eye $5\frac{1}{3}$, little greater than snout; maxillary extends $1\frac{1}{2}$ eye diameters beyond eye, length $1\frac{1}{5}$ in head from snout tip; 5 premaxillary teeth, second largest, lower teeth 10 to 12 with second 3 largest, denticulate backward

Stomias colubrinus GarmanStomias colubrinus Garman, Mem.

Mus. Comp. Zool., vol. 24, 1899, p. 275,

pl. 57, fig. 1. N. $6^{\circ}17'$ W. $82^{\circ}5'$, 1672 fathoms.— Brauer, Deutsch. Tiefsee Exped. Valdivia,

vol. 15, Tiefsee-Fische, 1906, p. 47, fig. 10

(luminous organs) (N. 1° to 14° to S. 3° to 11° → W. 2° to 21° to E. 0° to 10° , 1500 to 3500 meters).— Beebe, Zoologica N. Y. Zool. Soc., vol. 12, no. 1, April 30, 1929, p. 8 (N. $39^{\circ}15'$ W. 72° , 450 fathoms).— Norman, Discovery Rep., vol. 2, 1930, p.316 (N. 8° to 60° to S. 0° to 15° W. 18° to 51° to E. 5° to 10° , 110 to 1100 meters).

Depth 10; head $7\frac{3}{5}$. Snout 7 in head from snout tip; eye $5\frac{1}{3}$, little greater than snout; maxillary extends $1\frac{1}{2}$ eye diameters beyond eye, length $1\frac{1}{5}$ in head from snout tip; 5 premaxillary teeth, second largest, lower teeth 10 to 12 with second 3 largest, denticulate backward

of 12; large hooked fang each side of vomer; fang on forward end of each palatine; barbel $1\frac{1}{10}$ in head, luminous bulb $\frac{3}{4}$ length from chin, extend beyond bulb in couple of filaments or tentacle, interorbital level.

Infraorbital luminous organ about side of pupil, below hind part of eye. Lateral photophores 43 between pectoral and ventral, 9 between ventral and vent; ventral series 49 between isthmus and ventral, of which 10 on isthmus, 17 between ventral and anal, 14 from anal origin to caudal.

D. 18, fin height $2\frac{2}{5}$ in ^{total} head; A. 21, fin height $2\frac{2}{3}$; caudal 2; least depth of caudal peduncle 6; pectoral $1\frac{1}{4}$, rays 6; ventral rays 5, fin 1 in total head.

Intense black, fins lighter. Tongue white. Length 267 mm. (Garman.)

Stomias atriventer GarmanStomias atriventer Garman, Mem.

Mus. Comp. Zool., vol. 24, 1899, p. 277,

pl. 56, fig. 4. N. $25^{\circ}26'15''$ W. $109^{\circ}48'$, 1218
fathoms.Depth $9\frac{3}{4}$; head 7, width $2\frac{1}{4}$?Snout 5? in head; eye 5, subequal
with snout, $1\frac{1}{2}$ in interorbital;maxillary extends about 2 eye diameters
behind eye, length very slightly less
than head from snout tip; secondpair of premaxillary teeth longest;
first, second and fourth pairs of
mandibular teeth longest; interorbital

3? in head. Gill rakers 10 short.

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small denticles on lower branch of first arch; gill filaments $1\frac{1}{3}$ in eye.

Rather large photophore below eye center close above upper maxillary edge; upper lateral series 40? to ventral; lower or ventral series 9 on isthmus, 48³ between pectoral and ventral, 18² between ventral and anal, 16 between anal origin and caudal.

D. 15?, damaged; A. 17?, fin height 2 in total head; caudal $1\frac{4}{5}$?; forked, lobes slender, pointed; least depth of caudal peduncle subequal with eye; pectoral $2\frac{2}{3}$?; ventral 2?

Brown, abdomen dusky to blackish brown, whitish photophores in contrast. Iris gray. Fins all pale.

86887 U.S.N.M.

Albatross Station 2791.

Length 164 mm. Poorly preserved.

Stomias fuscus BeebeStomias fuscus Beebe, Zoologica Sci.Contr. New York Zool. Soc., vol. 12, no. 1,
April 30, (end of barbel).1929, p. 7, fig. 1b, N. $39^{\circ}15'$ W. 72° , 600 fathoms.
125 miles south of New York City.— Parr, Bull. Bingham Oceanogr. Collection,

vol. 2, art. 4, Oct. 1931, p. 8 (diagnosis in

(key)).

Depth $12\frac{1}{2}$; head 11. Snout $3\frac{1}{5}$ in head; eye $5\frac{2}{5}$, $1\frac{1}{3}$ in snout; barbel elongated spindle, $1\frac{1}{3}$ in head, pale golden yellow densely flecked with black chromatophores; terminal bulb unpigmented, purple, separated from spindle by narrow black band; bulb terminates in 2 elongated filaments, rather thick at base and tapering to fine point, wrinkled at basal half and jet black.

Suborbital luminous organ small, oval, purple on lower half, white above. Ventral photophores 11 between isthmus and pectoral, 47 between pectoral and

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ventral, 12 between ventral and anal,
15 between anal and caudal.

Scales 73 in lateral series.

D. 20; A. 22; ventral rays 5.
Length 250 mm. (Beebe.)

Atlantic.

Stomias boa (Risso)

Esox boa Risso, Ichth. Nice, 1810, p. 330,
pl. 10, fig. 34. Nice.

Stomias boa Valenciennes, Hist. Nat. Poiss.,
vol. 18, 1846, p. 368, pl. 545 (Nice). —

— Vaillant, Exped. Sci. Travailleur et
Talisman, Poiss., 1888, p. 115 (Gulf of
Gascony, off Portugal, Morocco, Banc
d'Arguin, Cape Verde Islands, 405 to 800
↓ meters).

→ Goode and Bean, Oceanic Ichth., 1895, p. 108,
pl. 34, fig. 128 (compiled). — Branner,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
Tiefsee-Fische, 1906, p. 49 (compiled). —
Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p.
275 (diagnosis).

Stomias boa (Risso)

Esoy boa Risso, Ichth. Nice, 1810, p. 330,
pl. 10, fig. 34. Nice.

Stomias boa Valenciennes, Hist. Nat. Poiss.,
vol. 18, 1846, p. 368, pl. 545 (Nice). —

Peters, Monatsber. Akad. Wiss. Berlin,
1876 (1877), p. 846 (Pacific Ocean in
N. Lat. $42^{\circ}56'$ W. Long. $149^{\circ}26'3''$). — Günther,

Rep. Voy. Challenger, vol. 22, 1887, p. 204

South of Australia, 1800 fathoms). —

Goode and Bean, Oceanic Ichth., 1895, p. 108,
pl. 34, fig. 128 (compiled). — Branner,

Deutsch. Tiefsee Exped. Valdivia, vol. 15,

Tiefsee-Fische, 1906, p. 49 (compiled). —

Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p.
275 (diagnosis).

— Jugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 71, pl. 4, fig. 1 (N. 36° to 40° W. 0° to 28° , 1200 to 5100 meters). —

Murray and Hjort, Depths of the Ocean, 1912, p. 611, fig. 453 (Plymouth to Gibraltar, thence to Gran Canaria, thence to Cape Bojador, Azores to Newfoundland, thence to Glasgow, thence to Bergen, 1000 to 5035 meters). —

Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 33 (compiled). — Parr, Bull. Bingham

Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 9 (note).

(— Beebe, Zoologica N.Y. Zool. Soc., vol. 12, No. 1, April 30, 1929, p. 6 (N. $39^{\circ}15'$ W. 72° , 400 to 700 fathoms).

~~p. 33 (compiled).~~

Stomias barbatus Cuvier, Règne Animal,
ed. 2, vol. 2, 1829, pp. 283, 284.

— Bonaparte, Iconog. Fauna Italica, Pesci,
vol. 3, pt. 1, fasc. 30, 1841, descr., pl., fig.
3 (Sicily).

Stomias elongatus Alcock, Ann. Mag. Nat.
Hist., series 6, vol. 8, 1891, p. 129. Laccadive
Sea (N. Lat. $8^{\circ}23'$ E. Long. $75^{\circ}47'$), in 738
fathoms. — Goode and Bean, Oceanic
Ichthy., 1895, p. 108 (reference). — Alcock,
Journ. Asiatic Soc. Bengal, vol. 65, pt.
2, 1896, p. 333 (reference), 'Cat. Deep
Sea Fishes Indian Museum, 1899, p. 147
(type).

Stomias barbatus Cuvier, Règne Animal,
ed. 2, vol. 2, 1829, pp. 283, 284.

— Bonaparte, Iconogr. Fauna Italica,
vol. 3, Pesci, pt. 1, fasc. 30, 1841, no
pagination, pl., fig. 3 (Sicily). —

Canestrini, Fauna Italia, Pesci, 1874,

p. 128 (Sicily). — Garman, Mem. Mus. Comp. Zool.,
vol. 24, 1899, p. 275 (diagnosis).

Stomias rissou Swainson, Nat. Hist.

Animals, vol. 2, 1839, p. 298 (on Risso).

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Stomias ferox Reinhardt, Overs. Kon.
dansk. Vidensk. Selsk. Forh.

Köbenhavn, vol. 10, 1842, p. 77. (Greenland.)

— Garman, Mem. Mus. Comp. Zool, vol. 24, 1899, p. 275 (diagnosis).

— Ege, Rep. Danish Oceanogr. Exped.

Medit., no. 4, vol. 2, A. 4, 1918, p. 1

(Azores to Faroes). — Norman, Discovery

Rep., vol. 2, 1930, p. 315 (N. $41^{\circ}37'15''$

W. $12^{\circ}30'20''$, 900 meters).

935

Stomias bonapartei Fowler, Proc.
Acad. Nat. Sci. Philadelphia, 1911,
p. 556, fig. 1. Italy. (Bonaparte
specimen.)

Stomias elongatus^{var.} atlanticus
Pappenheim, Deutsch. Südpolar-
Exp., vol. 15, pt. 2, 1914, p. 169. S.
35° 10' E. 2° 33', 3000 meters; N. 0° 12'
W. 16° 39', 10 meters.

Stomias atlanticus Norman, Discovery
Rep., vol. 2, 1930, p. 316, fig. 26
(S. 46° 25' E. 15° 13', 192 meters).

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LOGAN SQUARE
PHILADELPHIA, PA.

Depth $9\frac{4}{5}$ (to 13); head $7\frac{3}{4}$ to $9\frac{3}{4}$, width $2\frac{1}{4}$ to $2\frac{3}{5}$. Snout 4 to $4\frac{1}{2}$ in head from snout tip; eye $4\frac{3}{4}$ to $4\frac{4}{5}$, 1 to $1\frac{1}{4}$ in snout, $1\frac{1}{3}$ to $1\frac{3}{5}$ in interorbital; maxillary reaches hind ridge of preopercle, length $1\frac{1}{8}$ to $1\frac{1}{5}$ in head from snout tip; interorbital

$3\frac{3}{5}$ to 4, slightly convex. Gill rakers 9 minute spinules on lower branch of first arch, some with 2 or 3 auxiliary spinules; gill filaments $2\frac{1}{5}$ in eye.

barbel $1\frac{1}{8}$ times head with terminal bulb giving off 3 or 4 filaments;

Large photophore below eye center and close above upper maxillary

edge. Upper lateral series 46 between pectoral and ventral; lower or ventral series 9 on isthmus, then 2 to pectoral, 48 between pectoral and ventral, 10 between ventral and anal, 16 between anal origin and caudal.

D. 17 to 19, fin height 3 in total head length; A. 20 to 22, fin height $2\frac{1}{4}$; caudal $2\frac{1}{5}$ to $2\frac{2}{5}$, median longest, rounded behind; least depth of caudal peduncle equals eye; pectoral $1\frac{4}{5}$ to 2 in total head; ventral 1 to $1\frac{1}{4}$.

Largely blackish brown,

938

photophores showing mostly paler.
Iris neutral gray. Fins all pale
brownish.

Atlantic and Pacific Oceans.

23359 U.S.N.M.

Bureau of Fisheries 490. Schooner "Addison".
~~Captain Daniel Peeples~~
Length 243 mm.

23360 U.S.N.M. N. $44^{\circ}12'$ W. $58^{\circ}56'$.
In 230 fathoms. Captain Samuel Peeples.
Length 375 mm.

28780 U.S.N.M. N. $39^{\circ}46'$ W. $69^{\circ}47'$.
Bull. Bur. Fisher. Length 130 mm.

28876 U.S.N.M. N. 39° W. 71°
Fish Hawk Station. Length 145 mm.

29067 U.S.N.M. N. 38° W. 73°
Fish Hawk Station. Length 258 mm.

939

31803 U.S.N.M. N. $39^{\circ}37'$ W. $47^{\circ}55'$
Fish Hawk Station 1139. September 8,
188 . Length 335 mm.

33561 U.S.N.M. N. 39° W. 68°
Albatross Station 2101.
Length 75 mm.

35408 U.S.N.M. N. $39^{\circ}29'50''$ W. $71^{\circ}49'30''$
Albatross Station 2180.
Length 123 mm.

35409 U.S.N.M. N. $39^{\circ}29'00''$ W. $71^{\circ}46'00''$
Albatross Station 2181.
Length 108 mm.

35417 U.S.N.M. N. $39^{\circ}29'50''$ W. $71^{\circ}49'30''$
Albatross Station 2180.
Length 260 mm.

35453 U.S.N.M. N. $39^{\circ}59'30''$ W. $71^{\circ}08'00''$
Albatross Station 2188.
Length 106 mm.

35456 U.S.N.M. N. $39^{\circ}45'30''$ W. $70^{\circ}17'00''$
Albatross Station 2191.
Length 300 mm.

35623 U.S.N.M. N. $39^{\circ}11'00''$ W. $72^{\circ}58'30''$ ⁹⁴⁰

Length 340 mm.

38838 U.S.N.M. N. $40^{\circ}03'$ W. $70^{\circ}31'$
Albatross Station. 953.1

Length 113 mm.

40055 U.S.N.M. Nice. Zool. Mus.
Florence. Length 170 mm.

44583 U.S.N.M. N. $39^{\circ}54'$ W. $67^{\circ}05'30''$
Albatross Station. 2570

Length 278 mm.

44584 U.S.N.M. N. $39^{\circ}43'00''$ W. $71^{\circ}34'00''$
Albatross Station 2581.

Length 73 mm.

44585 U.S.N.M. N. $39^{\circ}48'$ W. $70^{\circ}36'$
Albatross Station. 2553

Length 137 mm.

44586 U.S.N.M. N. $39^{\circ}48'30''$ W. $70^{\circ}40'30''$
Albatross Station. 2554

Length 128 mm.

44587 U.S.N.M. N. $42^{\circ}46'$ W. $51^{\circ}00'$
Albatross Station 2427.

Length 270 mm.

83831 U.S.N.M. N. $40^{\circ}09'30''$ W. $67^{\circ}09'00''$
Albatross Station 2571.

Length 334 mm. In poor preservation.

83890 U.S.N.M.
Albatross Station 2718.

Length 99 mm.

83891 U.S.N.M.
Albatross Station 2691.

Length 190 mm.

85477 U.S.N.M. N. $40^{\circ}29'$ W. $66^{\circ}4'$
Albatross Station. 2572

Length 315 mm. In poor preservation.

1 example U.S.N.M.
Albatross Station 2428.
Length 158 mm.

Stomias hexagonatus Garman

Stomias hexagonatus Garman, Mem. Mus.

Comp. Zool., vol. 24, 1899, p. 276, pl. 56,

fig. 5. N. 5° to 10° W. 79° to 96° , 134 to

2232 fathoms.

Depth 8; head $6\frac{1}{4}$, width $3\frac{1}{2}$.

Snout $4\frac{1}{8}$ in head from snout tip;

eye 5, $1\frac{1}{5}$ in snout, $1\frac{1}{2}$ in interorbital;

maxillary nearly reaching hind ridge of preopercle, length $1\frac{1}{5}$ in head from snout tip; interorbital 4, convex.

Gill rakers as 9 spines on inner

edge of lower branch of first arch;

gill filaments equal eye.

Barbel to end of filaments

943

long as head, terminates in bulb giving off 2 or 3 slender filaments about twice long as eye.

Conspicuous photophore below ~~middle of eye~~ posteriorly and close to upper maxillary edge; upper lateral photophores 27 from pectoral to ventral, 10 between ventral and anal; lower or ventral series 46 before ventrals of which 8? on isthmus besides 2 more before pectoral origin; 11 between ventrals and anal and 14? more to caudal base.

D. 19, fin height $3\frac{1}{5}$ in total head length; A. 24, fin height $2\frac{1}{5}$;

caudal (damaged) apparently
 forked, small; least depth of caudal
 peduncle equals eye; pectoral 2?
 in total head; ventral 2?

Uniform brown generally, under
 surfaces more blackish. Iris neutral
 gray. Fins whitish.

57893.

Gibb. 3382

L. 140 mm - No. 3395A.

L. 76 mm - No. 3383A.

Stomias brevibarbus Ege

Stomias brevibarbus Ege, Rep. Danish
Oceanogr. Exped. Medit., No. 4, A. 4, 1918, p.

22, fig. 11. N. $31^{\circ}59'$ W. $59^{\circ}52'$; N. $29^{\circ}24'$ W. $48^{\circ}8'$;

N. $21^{\circ}47'$ W. $47^{\circ}11'$; N. $25^{\circ}35'$ W. $53^{\circ}13'$. — Parr,

Bull. Bingham Oceanogr. Collection, vol.
2, art. 4, Oct. 1931, p. 9 (diagnosis in key).

Depth 9 to 10; head 8 to 9. Snout
 $6\frac{1}{8}$ in head from snout tip; eye 4,
greater than head; maxillary extends
 $2\frac{1}{2}$ eye diameters behind eye, length $1\frac{1}{6}$
in head from snout tip; premaxillary
teeth 12, second largest, lower teeth 26,
subequal; barbel 3 in head; interorbital
very low, eye impinging on upper profile.

Postorbital luminous organ little
less than eye. Lateral photophores
33 or 34 between gill opening and
ventral, 14 or 15 between ventral and
anal; ventral series 11 or 12 from
isthmus to pectoral, 33 to 35 from pectoral
to ventral, 12 or 13 from ventral to anal,

15 or 16 from anal to caudal.

946

D. 18 or 19, fin height 4 in total head length; A. 19 or 20, fin height $3\frac{2}{5}$; least depth of caudal peduncle $4\frac{1}{8}$; pectoral $1\frac{1}{2}$, rays 7; ventral rays 5, fin $1\frac{1}{3}$ in total head.

Black, fins yellowish. Scales without metallic sheen. Length 100 mm. without caudal. (Ege.)

Stomias gracilis Garman

Stomias gracilis Garman, Mem. Mus.
Comp. Zool., vol. 24, 1899, p. 274 (275) (con
Günther).

Parr, Bull. Bingham Oceanogr. Collection,
vol. 2, art. 4, Oct. 1931, p. 9 (diagnosis in
key).

Stomias boa (not Risso) Günther, Rep.

Voy. Challenger, vol. 22, 1887, p. 204 (South
of Australia).

Depth $12\frac{1}{2}$; head $9\frac{1}{3}$. Barbel
long as head, ending in 3 filaments.

Scales 88 in lateral line.

Ventral row of photophores 54
between pectoral and ventral, 14 between
ventral and anal, 15 between anal
and caudal.

D. 18; A. 18; pectoral rays 6;
ventral rays 5; paired fins very
narrow and elongate. (Günther.)

Antarctic.

949

Stomias nebulosus Alcock

Stomias nebulosus Alcock, Ann. Mag.

Nat. Hist., series 6, vol. 4, 1889, p. 451.

Gulf of Manaar (N. Lat. $6^{\circ}29'$ E. Long. $79^{\circ}34'$), in 597 fathoms; Illustrations

Zool. Investigator, Fishes, pt. 1, 1892,

pl. 7, fig. 1. — Goode and Bean, Oceanic

Ichth., 1895, pp. 108, 515 (reference). —

Alcock, Journ. Asiatic Soc. Bengal,

vol. 65, pt. 2, 1896, p. 333 (reference);

Cat. Deep Sea Fishes Indian Museum,

1899, p. 146 (type). — Brauer, Deutsch.

— Garman, Mem. Mus. Comp. Zool., vol. 24,
1899, p. 275 (diagnosis).

~~region~~
(off East Africa in S. Lat. $0^{\circ}24'5''$ E. Long.

Stomias nebulosus Alcock

Stomias nebulosus Alcock, Ann. Mag.

Nat. Hist., series 6, vol. 4, 1889, p. 451.

Gulf of Manaar (N. Lat. $6^{\circ}29'$ E. Long. $79^{\circ}34'$), in 597 fathoms; Illustrations

Zool. Investigator, Fishes, pt. 1, 1892,

pl. 7, fig. 1. — Goode and Bean, Oceanic Ichth., 1895, pp. 108, 515 (reference). —

Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 333 (reference);

Cat. Deep Sea Fishes Indian Museum, 1899, p. 146 (type). — Brauer, Deutsch.

Tiefsee Exped. Valdivia, vol. 15,

Tiefsee-Fische, 1906, p. 50, text fig. (head)

(off East Africa in S. Lat. $0^{\circ}24'5''$ E. Long.

42° 49' 4" in 1019 meters; h. Lat. 0° 25' 17"
E. Long. 43° 37' 8" in 1000 meters). —
Weber, Siboga Exped., vol. 57, Fische,
1913, p. 13 (Flores Sea, Manipa Strait,
Timor Sea, in 421 to 1536 meters). —
Weber and Beaufort, Fishes Indo
Austral. Archipelago, vol. 2, 1913, p.
112, fig. 40 (on Weber's materials). —
Parr, Bull. Bingham Oceanogr. Collection,
vol. 2, art. 4, Oct. 1931, p. 10 (diagnosis
in key).

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Depth $7\frac{1}{2}$ to 10; head 7 to $8\frac{1}{2}$,
width $2\frac{3}{4}$ to $2\frac{4}{5}$. Snout $4\frac{1}{5}$ to
 ~~$4\frac{1}{5}$~~ to $4\frac{1}{4}$ in head from snout tip;
eye $3\frac{3}{4}$ to 4, greater than snout,
little greater than interorbital in
young to subequal with age;
maxillary reaches preopercle ridge,
length $1\frac{1}{10}$ to $1\frac{1}{8}$ in head from
snout tip; interorbital $3\frac{1}{5}$ to $4\frac{1}{3}$,
convex. Gill rakers as 6 or 7 small
spinules along inner edge of lower
branch of first arch; gill filaments
subequal with eye.

Barbel $1\frac{2}{5}$ to $2\frac{1}{5}$ in total
head length, with rather long terminal

bulb giving off 2 filaments each about long as eye.

Rounded luminous organ little smaller than pupil usually present below hind portion of eye and close above upper maxillary edge; upper lateral photophores ^{P 37} 34₁ between pectoral and ventral, ^{or 7} 6₁ between ventral and anal; lower or ventral series ^{to 51} 48₁ before ventral of which ^{12 or} 13 on isthmus or before pectoral origin, ^{or 7} 6₁ between ventral and anal, then ^{16 or} 17 to caudal base.

D. 16 to 18, fin height 2 in total head; A. 23 or 24, fin height 1 1/2 to

$1\frac{3}{4}$ in head; caudal $1\frac{1}{3}$ to 2,
 small, forked, lobes slenderly
 pointed; least depth of caudal
 peduncle $1\frac{1}{3}$ to $1\frac{2}{3}$ in eye; pectoral
 $1\frac{1}{3}$ to $1\frac{2}{5}$ in total head ^{rays 5 or 6} length;
 ventral $1\frac{1}{8}$ to $1\frac{1}{3}$ times total head
 length, rays 5.

Deep or blackish brown, under
 surface more sooty or blackish.
 Iris neutral gray. Fins pale or
 whitish.

Indian Ocean, East Indies,
 Philippines.

934

D. 5216. Anna Vola Island, N. 44° W., 29.50 miles (N. $12^{\circ}52'E$. $123^{\circ}23'30''$), between Burias and Luzon. In 215 fathoms. April 22, 1908. Length 60 to 145 mm. 4 examples.

D. 5387. Bagatao Island Light (outer), S. 80° E., 27 miles (N. $12^{\circ}54'40''$ E. $123^{\circ}20'30''$), between Burias and Luzon. In 209 fathoms. March 11, 1909. Length 99 to 144 mm. 8 examples.

3576. D. 5533. Balicasag Island (C.), N. 71° E., 9.4 miles (N. $9^{\circ}27'15''$ E. $123^{\circ}31'48''$), between Cebu and Siquijor. In 432 fathoms. August 19, 1909. Length 100 mm.

D. 5534. Balicasag Island (C.), N. 72° E., 14.7 miles (N. $9^{\circ}26'E$. $123^{\circ}26'37''$), between Cebu and Siquijor. In 333 fathoms. August 19, 1909. Length 80 to 121 mm. 4 examples.

D. 5363. Cape Santiago Light, S. 79° W., 4.5 miles (N. $13^{\circ}47'20''$ E. $120^{\circ}43'30''$), Balayan Bay, Luzon. In 180 fathoms. February 20, 1909. Length 69 to 120 mm. 8 examples.

953

3645 and 3646. D. 5564. Dammi Island (N.), S. 85° W., 6.1 miles (N. $5^{\circ}50'$ E. $120^{\circ}31'$), between Jolo and Tawi Tawi. In 236 fathoms. September 21, 1909. Length 123 to 172 mm.

D. 5567. Dammi Island (N.), N. 81° W., 9 miles (N. $5^{\circ}48'$ E. $120^{\circ}33'45''$), north of Tawi Tawi. In 268 fathoms. September 21, 1909. Length 40 to 135 mm. 13 examples.

D. 5177. Escarceo Light, S. 53° E., 5.80 miles (N. $13^{\circ}35'$ E. $120^{\circ}54'36''$), Verde Island Passage. In 260 fathoms. March 24, 1908. Length 100 mm.

10543 and 10544. D. 5327. Hermanos Island (N.), N. 55° E., 6.80 miles (N. $18^{\circ}31'30''$ E. $122^{\circ}3'$), off northern Luzon. In 198 fathoms. November 12, 1908. Length 112 to 198 mm.

D. 5231. Limasawa Island (S.), S. 68° E., 21.70 miles (N. $10^{\circ}1'15''$ E. $124^{\circ}43'15''$), between Bohol and Leyte. May 7, 1908. Length 55 to 109 mm. 8 examples.

5541.

956

D. 5233. Linasana Island (S.), S. 70° E., 19.50 miles (N. $10^{\circ}00'22''$ E. $124^{\circ}45'06''$), between Bohol and Leyte. May 7, 1908. Length 118 mm.

5790. D. 5289. Inatocot Point, S. 42° E., 5 miles (N. $13^{\circ}41'50''$ E. $120^{\circ}58'30''$), China Sea, vicinity southern Luzon. In 172 fathoms. July 22, 1908. Length 61 to 118 mm. 2 examples.

D. 5171. Omapui Island (W.), S. 22° W., 12 miles (N. $5^{\circ}05'$ E. $119^{\circ}28'$), Sulu Archipelago vicinity Sibutu Island. In 250 fathoms. February 28, 1908. Length 90 to 100 mm. 3 examples.

957

Genus Macrostomias Brauer

Macrostomias Brauer, Zool. Anzeiger,
vol. 25, 1902, p. 283. Type Macrostomias
longibarbatulus Brauer, monotypic.

Body greatly elongated, thin,
strongly compressed. Head small,
compressed. Mouth cleft long,
lower jaw strongly protruded.

Both jaws with 5 large teeth,
gradually shorter posteriorly.

Palatines with 1 to 3 pairs of
canines. Gill openings broad.

Gill rakers very short. Gills 4.
Branchiostegals 18.

Body covered with thin hexagonal
scales. Dorsal and anal for

postmedian, near last eighth in trunk. Dorsal rays 13 to 15.

Anal rays 17 or 18. Pectoral rays 6.

Ventral rays 4, filamentous, postmedian.

One species.

Macrostomias longibarbatus Brauer

Macrostomias longibarbatus Brauer,

Zool. Anzeiger, vol. 25, 1902, p. 283.

Gulf of Guinea, 1800 meters; Deutsch.

Tiefsee Exped. Valdivia, vol. 15, Tiefsee-

Fische, 1906, p. 52, pl. 3, fig. 2 (type

from N. $3^{\circ}11'1''$ E. $5^{\circ}34'9''$; N. $4^{\circ}36'1''$ E.

$48^{\circ}37'6''$, 1213 meters^{off}, north east Africa).

— Murray and Hjort, Depths of the Ocean,
1912, p. 612 (N. $35^{\circ}32'$ W. $7^{\circ}7'$, 1215 meters,

between Gibraltar and Gran Canaria; N.

$31^{\circ}24'$ W. $34^{\circ}47'$, between Gran Canaria and

Fayal). — Horman, Discovery Rep., vol. 2,

1930, p. 315 (S. $00^{\circ}46'$ E. $5^{\circ}49'15''$, 850 to 950

meters).

960

Depth 18; ^{head} $1\frac{3}{5}$. Snout ^{to eye} 5 in
head from snout tip; eye 9, 2
in snout; orbit 5; maxillary
extends $3\frac{1}{2}$ eye diameters behind
eye, length $1\frac{1}{5}$ in head from
snout tip; all teeth fixed, and
curved; large premaxillary with
5 large teeth, first largest;
maxillary with small teeth;
lower jaw with 5 teeth with
first 3 equally long though shorter
than premaxillary teeth, fourth
smaller than first 3 and fifth

961

smaller than fourth; vomer with
pair of teeth; 1 or 2 pairs on
palatines; barbel at least half
total length, with terminal luminous
organ, with 5 short filaments
from each side of base posteriorly,
each with small terminal bulb
and third and fourth filament
with small bulb little above
bases; interorbital low.

Scales hexagonal, in 6 transverse
rows.

Large, elongate, postocular luminous

organ; upper lateral photophores 79 between gill opening and ventral, 67 or 68 between ventral and anal; lower row 93 from isthmus to ventral, 65 to 67 between ventral and anal, 21 or 22 between anal origin and caudal; 18 on branchiostegals.

D. 13 to 15, fin height $1\frac{4}{5}$ in total head; A. 17 or 18, fin height $2\frac{2}{3}$; caudal very slightly greater than head, deeply forked; least depth of caudal peduncle $4\frac{2}{3}$ in total

head length; pectoral $1\frac{2}{3}$;
ventrals about $4\frac{3}{5}$ in total length.

Back and belly dark, scales
pearly. Lower jaw gray. Eye bluish.
Fins clear gray. Length 295 mm.

(Brauer.)

Atlantic and Indian Oceans.

Elapterostomias new genus

964

Type Elapterostomias philippinus new species

Body elongate, well compressed. Head large. Two pairs of long fangs in premaxillary and 1 pair at front of mandible.

Barbel long as head, with simple terminal bulb. Dorsal and anal origins opposite. Dorsal rays 14. Anal rays 13. Pectoral less than head. Ventral small.

Diagnosis. Related to Chirostomias
 Regan and Trewavas in the presence
 of an adipose fin but differing in
 the presence of its large postorbital
 luminous organ.

(ἔλαιον, oil or fat; πτερον, fin; Stomias.)

Elapterostomias philippinus new species

Depth 6; head $4\frac{1}{4}$, width $2\frac{2}{3}$.
Snout 5 in head from snout tip;
eye 6, $1\frac{1}{5}$ in snout, $1\frac{1}{5}$ in interorbital;
maxillary extends $3\frac{3}{4}$ eye diameters
behind eye, slender, length $1\frac{1}{10}$ in
head from snout tip; premaxillary
teeth 5 or 6, second or third pair
longest; 8 to 10 rather large well
spaced teeth on each maxillary;
11 teeth on each mandibular ramus,
second usually longest; 11 or 12 teeth
on each palatine; barbel long as
head, slender, with small, simple,
terminal bulb; interorbital $3\frac{1}{4}$ in

head from snout tip, low, slightly⁹⁶⁷
convex. Gill rakers 5 + 11, pairs of
short close set denticles, equal gill
filaments or $1\frac{2}{3}$ in eye.

Ovoid luminous organ close
above upper maxillary edge, entirely
behind eye, length but slightly
less than eye; small photophore
at middle of lower eye edge;
lateral series of photophores 22
between pectoral and ventral, 14
between ventral and anal with 2
more over front of anal; lower
or ventral series 13 on isthmus to
pectoral, 22 between pectoral and

ventral, 13 between ventral and anal, then 15 from front of anal to caudal.

D. II, 12, rays broken, ^{fin height} at least $2\frac{1}{3}$? in total head length; adipose fin length equals eye; A. II, 11, rays broken, fin height $3\frac{2}{3}$? in total head length; caudal broken, evidently forked, length 2?; pectoral $1\frac{7}{8}$; ventral $2\frac{2}{5}$?; least depth of caudal peduncle $3\frac{4}{5}$.

Ventral dusky to deep violaceous gray, blackish on under surface. Iris neutral black. Fins with dusky brown tints.

Diagnosis. Contained in that of genus.
Type no. U. S. N. M.

Diagnosis. Characterized by
its small eye, greatly advanced,
and dorsal and anal origins
opposite.

Type No. 92343 U.S. N. M.

D. 5299. China Sea, vicinity
southern Luzon (N. $20^{\circ}5'$ E. $116^{\circ}5'$).

In 524 fathoms. August 8, 1908.

Length 164? mm., caudal ends
broken off.

971

Genus Chirostomias Regan and Trewavas

Chirostomias Regan and Trewavas, Danish
Dana Exped., Oceanogr. Rep., no. 6, March
10, 1930, p. 54. Type Chirostomias

phiopterus Regan and Trewavas, monotypic.

Mouth cleft straight. Premaxillaries
and lower jaw with fixed curved
barbed fangs; maxillary with row
(7 to 12) of fangs and few (2 to 6)
small oblique teeth at hind end.
Pair of teeth on vomer; long series
(7 to 9) on each palatine; several
pairs on basibranchials; on gill
arches teeth mostly paired. Postocular
luminous organ minute, generally

concealed under skin. Dorsal rays 18 to 20. Anal rays 22 to 26. Dorsal and anal begin in same vertical, ^{anal} ending behind dorsal, which followed by small adipose fin. Pectoral rays 6, slender, all branched terminally, 1 or more with luminous swelling. Ventral 1, 6, little postmedian.

Analysis of species

a.¹ Eye 4 to 5 in head; d. 16. lucidimanus.

a.² Eye $5\frac{4}{5}$ in head; d. 18 to 20. pliopterus.

Chirostomias lucidimanus Beebe

Chirostomias lucidimanus Beebe,
 Zoologica N. Y. Zool. Soc., vol. 13, no. 4,
 March 1932, p. 52. Ten miles south
 of Hansuch, Bermuda, 500 fathoms.

Depth $6 \frac{1}{5}$; head 6. Snout $3 \frac{3}{4}$ in
 head; eye $5 \frac{4}{5}$; 2 large front ^{upper} canines,
 then 5 moderate wide spaced teeth
 outside, in line with second canine
 10 even normal jaw teeth; barbel long
 as head, elongate blue black bulb
 somewhat compressed, terminal part
 projects as 2 large tubular divisions
 each tipped with pair of sharp tooth-
 like structures opening toward one
 another with uppermost with few very
 short tubercles at tip and lower
 tipped with long, beaded, luminous
 tentacle while from ventral side 5
 long tentacles spring from single
 base; dorsal surface of bulb with
 number of isolated luminous spots
 which consolidate into thick luminous
 white comb, smooth and rounded, with

974

slender terminal filament; luminous
tissue dies out on surface of mid
bulb of scattered spots and dots.

Lateral photophores 23 between
gill opening and ventral, 19 between
ventral and anal of which 7 above
anal; ventral series 9 between isthmus
and pectoral, 25 between pectoral and
ventral, 19 between ventral and anal
with 6 above anal, 10 from anal to
caudal.

D. 16; A. 22; pectoral rays 6;
ventral rays 7.

Black. Length 225 mm. without
caudal. (Beebe)

Bermuda.

Chirostomias phiopterus Regan and Trewavas

Chirostomias phiopterus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 54, pl. 1, fig. 1, text

fig. 30 (end of barbel). N. $43^{\circ}52'$ W. $2^{\circ}27'$,

Bay of Biscay; N. $33^{\circ}18'$ W. $56^{\circ}03'$; N. $20^{\circ}26'$

W. $61^{\circ}03'$; N. $37^{\circ}40'$ W. 26° ; 150 to 300 meters.

Depth 6 to $7\frac{2}{3}$; head 5 to 6. Snout $3\frac{3}{5}$ in head from snout tip; eye 4 to 5, $1\frac{1}{4}$ in snout; maxillary extends $1\frac{2}{3}$ eye diameters behind eye, length $1\frac{1}{10}$ in head from snout tip; barbel $\frac{2}{3}$ to $\frac{3}{4}$ of head, with stout black stem about $\frac{5}{8}$ its length, ending in large ovate swelling with 3 terminal papilliform projections, posterior and median with translucent skin and pigmented core, anterior translucent; anterior projection bearing on its anterior edge short stalk with brush of 4 to 6 filaments, beyond a club shaped appendage and at end of posterior edge 2 prominences.

each with pair of filaments, median projection with double tip, and posterior projection with fringe of filaments along posterior edge, terminal enlarged and prolonged with bead like swellings; interorbital moderately low.

Lateral photophores 24 between gill opening and ventral, 18 to 20 between ventral and anal; ventral series 8 or 9 between isthmus and pectoral, 26 to 28 between pectoral and ventral, 18 to 20 (5 above anal) between ventral and anal, 10 or 11 between anal and caudal.

D. 18 to 20, fin height 3 in head; A. 22 to 26, fin height $2\frac{4}{5}$; caudal $1\frac{3}{4}$, forked; least depth of caudal peduncle $4\frac{3}{5}$; pectoral far forward, close to one another, sixth ray longest, sometimes over twice head, with club shaped luminous swelling and similar smaller swellings sometimes on first and fifth rays; ventral length 2 in head,

origin equidistant between eye and
caudal base or little nearer caudal.

Length 115 mm. without caudal.

(Regan and Trewavas.)

Atlantic, north of N. 20°.

Genus Trigonolampa Regan and Trewavas
Trigonolampa Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 55. Type Trigonolampa
miriceps Regan and Trewavas, monotypic.

Mouth cleft straight. Premaxillaries
and lower jaw with fangs of moderate
size, curved, pointed, fixed; maxillary
with few erect and series of small
oblique teeth; 1 or 2 pairs of teeth on
vomer and long palatine series of 13
teeth on each side; 8 pairs of teeth
on basibranchials; small teeth on
gill arches. Postocular luminous
organ close to eye; posterior small

rounded luminous patch - and above
large triangular one extending
backwards from eye. Dorsal rays
18. Anal rays 19. Dorsal and
anal fins begin in same vertical.
Pectoral rays 5, outermost swollen
at base. Ventral rays 7, nearly
median.

980

Trigonolampa miriceps Regan and Trewavas

Trigonolampa miriceps Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., 20.6,
March 10, 1930, p. 55, pl. 1, fig. 2. N. $48^{\circ}42'$
W. $12^{\circ}20'$, in 1860 meters.

Depth 8; head $5\frac{1}{3}$. Eye 5 in head;
barbel $\frac{3}{4}$ of head, tapering, ending
in small bulb with short terminal
filament.

Postocular luminous organ $\frac{1}{3}$ of head.
Lateral photophores 22 between gill
opening and ventral, 26 between ventral
and anal. Ventral series 11 between
isthmus and pectoral, 22 between
pectoral and ventral, 24 between
ventral and anal, 11 between anal and
caudal.

D. 18; A. 19; pectoral rays 5;
ventrals slightly nearer base of caudal
than snout end. Length 105 mm. without
caudal. (Regan and Trewavas.)
Atlantic, south of Ireland.

981

Genus Odontostomias Horman

Odontostomias Horman, Discovery Rep.,
vol. 2, 1930, p. 309. Type Odontostomias
micropogon Horman, orthotypic.

Body elongate. Head short. Mouth
cleft straight, jaws rather strong.
Teeth tapering to sharp ends; first
upper tooth rather small, fixed;
second long, depressible, followed
by 2 or 3 outer small teeth and
1 inner stronger depressible tooth;
below pair of small depressible
teeth at mandibular symphysis,
strong fixed fang on either side,
followed by inner depressible

982

tooth and 3 or 4 outer fixed teeth;
maxillary teeth small, more or
less erect; 2 groups, each of 1 to
4 teeth on vomer; 2 to 5 teeth on
each palatine; single pair of
teeth on basibranchials ^{or} none;
teeth on gill arches in pairs.

Postocular luminous organ well
developed (♂?) or absent (♀?).

Dorsal rays 20 to 23. Anal rays
23 to 26, inserted nearly below dorsal
origin. Pectoral rays 7 to 9, without
isolated ray. Ventral rays 7,
well postmedian.

423

Analysis of species

a.¹ Depth $8\frac{1}{2}$ to $12\frac{1}{2}$; barbel $1\frac{1}{2}$ to 4
in head.

micropogon.

a.² Depth $7\frac{3}{4}$; barbel $1\frac{1}{3}$ times fish.
masticopogon.

and ventral.

spilorhynchus.

d.² Terminal part of barbel with 2 white bodies behind axis and 1 in front, also terminal filament; 25 photophores in ventral series between pectoral and ventral.

valdiviae.

d.³ Terminal part of barbel with 2 white bodies behind axis, terminal much larger, with strip of granular luminous tissue in front of axis; no filament; 25 photophores in ventral series between pectoral and

Odontostomias micropogon Norman

Odontostomias micropogon Norman,

Discovery Rep., vol. 2, 1930, p. 309, fig.

17 (skull), fig. 18. S. $15^{\circ}55'E$. $10^{\circ}35'$, 600 to

700 meters; S. $13^{\circ}58'30''E$. $11^{\circ}43'30''$, 200

meters; S. $5^{\circ}54'E$. $11^{\circ}19'$, 110 meters; N. 13°

$25'W$. $18^{\circ}22'$, 900 meters.

Depth $8\frac{1}{2}$ (young) to $12\frac{1}{2}$; head 7 to $8\frac{2}{3}$. Snout $3\frac{3}{4}$ in head from snout tip; eye $4\frac{1}{4}$ to 6, $1\frac{2}{3}$ in snout; maxillary extends $1\frac{2}{3}$ eye diameters behind eye, length $1\frac{1}{2}$ in head; 5 fixed teeth in lower jaw; pair of teeth on basibranchials; barbel $\frac{1}{4}$ to $\frac{2}{3}$ length of head, stem black, ending in simple white portion, scarcely broader than stem in adults but forming more or less definite bulb in young; interorbital low.

Lateral photophores 32 to 35 between gill opening and ventral, 12 to 14 between ventral and anal; ventral series 10

or 11 between isthmus and pectoral,
34 to 36 between pectoral and ventral,
13 to 15 between ventral and anal,
12 or 13 between anal and caudal.
Postocular luminous organ little less
than eye.

D. 20 to 23, fin height $2\frac{1}{8}$ in
total head length; A. 23 to 26, fin
height $2\frac{2}{5}$; caudal $2\frac{1}{3}$, forked;
least depth of caudal peduncle 6;
pectoral $4\frac{1}{2}$, rays 7 to 9; ventral 1,
rays 7.

Length 290 mm. (Norman.)

North and South Atlantic.

Odontostomias masticopogon horman

Odontostomias masticopogon horman,

Discovery Rep., vol. 2, 1930, p. 310, fig. 19.

N. $13^{\circ}25'$ W. $18^{\circ}22'$, 900 meters.

Depth $9\frac{1}{2}$; head $7\frac{2}{5}$. Snout 4 in head from snout tip; eye $5\frac{3}{4}$, $1\frac{1}{3}$ in snout; maxillary extends eye diameter behind eye, length $1\frac{1}{2}$ in head; 4 fixed teeth in lower jaw; no teeth on basibranchials; barbel $1\frac{1}{3}$ times length of fish, bulb and possibly part of stem broken off apparently; interorbital low.

Lateral photophores 35 from gill opening to ventral, 15 from ventral to anal; ventral photophores 10 from isthmus to pectoral, 36 from pectoral to ventral, 14 from ventral to anal.

D. 23, fin height $2\frac{1}{3}$ in, head; A. 26 or 27, fin height $2\frac{1}{4}$; caudal $1\frac{3}{5}$, well forked; least depth of caudal peduncle 7; pectoral $2\frac{2}{5}$, rays

9; ventral 1, rays 7.

Length 290 mm.

(Norman.)

North Atlantic.

Genus Opostomias Günther

Opostomias Günther, Rep. Voy.

Challenger, vol. 22, 1887, p. 208. Type

Opostomias micripnus Günther,

monotypic.

Moderately elongate. Mouth cleft straight, jaws strong. Teeth tapering to sharp edges; in each jaw 4 fixed teeth on each side, first lower and second upper long fangs, lower pair received into pits in upper jaw, perforating premaxillaries; single inner depressible tooth in each jaw behind anterior fang; maxillary teeth minute, not piercing skin; pair of small teeth on vomer; palatines and basibranchials toothless; teeth on gill arches small. Dorsal rays 21. Anal rays 23.

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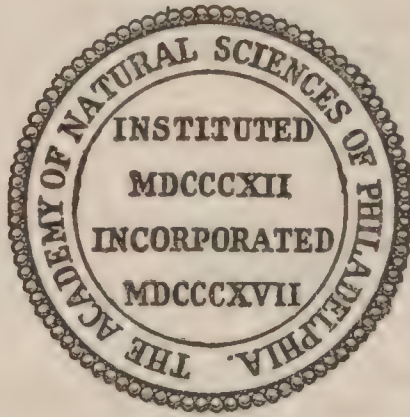
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Pectoral rays 1+3, isolated ray
produced. Ventral rays 7, fin
little premedian.

Opostomias micripnus (Günther)

Echiostoma micripnus Günther, Ann.

Mag. Nat. Hist., series 5, vol. 2, August
1878, p. 180. Off south coast of Australia,

in 2150 fathoms. — Macleay, Proc. Linn.

Soc. New South Wales, vol. 6, 1881, p. 227

(copied). — Goode and Bean, Oceanic

Ichth., 1895, p. 110, pl. 35, fig. 132 (copied).

Opostomias micripnus Günther, Rep. Voy.

Challenger, vol. 22, 1887, p. 208, pl. 53 fig.

a (type). — Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, December

30, 1927, p. 57 (text fig. 6 on p. 7) (compiled).

— Regan and Trewavas, Dana's Dana Exped.

Oceanogr. Rep., No. 6, March 10, 1930, p. 56, figs. 31-32
(type).

Depth $7\frac{1}{2}$; head $8\frac{1}{2}$. Snout 4 in head from snout tip; eye $7\frac{1}{2}$, $\frac{1}{2}$ in snout; maxillary extends $2\frac{1}{2}$ eye diameters behind eye, length $1\frac{1}{3}$ in head from snout tip; barbel $4\frac{3}{4}$ in body without caudal, stem black with white spots; elongate bulb with pigmented terminal filament; unpigmented filament basal to bulb, 2 median and 3 pairs on bulb.

Postorbital luminous organ $\frac{2}{3}$ of eye. Lateral photophores 27 between gill opening and ventral, 26 between ventral and anal. Ventral series 5

992

between isthmus and pectoral, 30
between pectoral and ventral, 26
between ventral and anal, 13
between anal and caudal.

D. 21, fin height $1\frac{4}{5}$ in total
head length; A. 23, fin height $2\frac{3}{4}$;
caudal $1\frac{4}{5}$; least depth of caudal
peduncle 7; ventral $1\frac{1}{10}$; pectoral
 $7\frac{3}{5}$ in body without caudal, rays
1 + 3, produced ray with terminal third
white with pigmented thread along
1 edge, slightly swollen and then tapering.
Length 38.5 mm. without caudal.
(Regan and Trewavas.)
South of Australia.

Genus Flagellostomias Parr

Flagellostomias Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, ^{Dec. 30,} 1927,

p. 49. Type Flagellostomias tyrannus Parr,
monotypic.

Body elongate. Mouth cleft straight,
jaws strong. Few fixed teeth in
each jaw with spear-shaped ends,
first in lower jaw and second in
upper long fangs, lower fitting in
groove on outer side of upper jaw.
between first and second teeth;
single inner depressible tooth next
to anterior fang in lower jaw;
maxillary with or without erect

994

tooth and with series of small oblique teeth. Pair of teeth on vomer and 1 or 2 on each palatine; pair of small teeth on basibranchials, small teeth on gill arches. Dorsal rays 14 to 17. Anal rays 23 to 26, extend forward well before dorsal. Pectoral rays 1+10, isolated ray long. Ventral rays 7, postmedian.

One species.

Flagellostomias boureei Zugmayer

Eustomias boureei Zugmayer, Bull. Inst. Océanogr. Monaco, no. 253, 1913, p. 3.

↑ — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 76 (compiled).

Fig. 34 (pectoral ray), pl. 2, fig. 2 (N. $35^{\circ}53'$ W.

$7^{\circ}26''$; N. $33^{\circ}26'$ W. $16^{\circ}59'$ off Madeira; N. $21^{\circ}57'$

W. $22^{\circ}58'$; N. $17^{\circ}55'$ W. $24^{\circ}35'$ off Cape Verde Islands;

— Norman, Discovery Rep., vol. 2, 1930, p. 310.

(S. $32^{\circ}45'$ W. $8^{\circ}47'$, 650 meters; S. $5^{\circ}54'$ E. $11^{\circ}19'$, 150 meters; N. $6^{\circ}55'$ W. $15^{\circ}54'$, 800 meters).

Flagellostomias tyrannus Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, 1927, p. 50, figs. 29 and 30. N. $23^{\circ}42'$ W. $76^{\circ}43'$, 7000 feet.

Flagellostomias boureei Zugmayer

Eustomias boureei Zugmayer, Bull. Inst. Océanogr. Monaco, no. 253, 1913, p. 3.

Flagellostomias boureei Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 57, fig. 33 (end of barbels)

Fig. 34 (pectoral ray), pl. 2, fig. 2 (N. $35^{\circ}53'$ W.

$7^{\circ}26''$; N. $33^{\circ}26'$ W. $16^{\circ}59'$ off Madeira; N. $21^{\circ}57'$

W. $22^{\circ}58'$; N. $17^{\circ}55'$ W. $24^{\circ}35'$ off Cape Verde Islands;

N. $13^{\circ}35'$ W. $30^{\circ}11''$; N. $12^{\circ}59'$ W. $32^{\circ}49''$; N. $13^{\circ}47'$

W. $61^{\circ}26'$ west of St. Lucia; N. $37^{\circ}40'$ W. 26° ; 200 to

5000 meters).

Flagellostomias tyrannus Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, 1927, p. 50, figs. 29 and 30. N. $23^{\circ}42'$ W. $76^{\circ}43'$, 7000 feet.

Depth 9 to 12; head $6\frac{1}{2}$ to $8\frac{1}{2}$. Snout $3\frac{3}{4}$ in head from snout tip; eye 5 to 6, $1\frac{2}{5}$ in snout; maxillary extends 2 eye diameters behind eye, length $1\frac{1}{6}$ in head from snout tip; barbel $\frac{1}{2}$ (young) to $\frac{2}{3}$ of fish, pigmented stem with white spots, oblong or ovate bulb bears much smaller terminal bulb; terminal part of stem and bulb with numerous unpigmented filaments; interorbital low.

Postocular luminous organ small photophore. Lateral photophores 30 to 32 between gill opening and ventral, 13 to

17 between ventral and anal; ventral series 8 to 10 between isthmus and pectoral, 31 to 33 between pectoral and ventral, 14 to 16 between ventral and anal, 15 to 17 between anal and caudal.

D. 14 to 17, fin height $4\frac{4}{5}$ in total head length; A. 23 to 26, fin height 6; caudal $3\frac{1}{8}$; least depth of caudal $7\frac{4}{5}$; pectoral $1\frac{2}{5}$, rays 10 and long filamentous ray $3\frac{1}{2}$ in body without caudal, with long ovate subterminal bulb; ventral 5, rays 7.

Length 322 mm. without caudal.
(Regan and Trewavas.)
Atlantic, Caribbean Sea.

Genus Thysanactis Regan and Trewavas

Thysanactis Regan and Trewavas, Danish ^{Exped.} Dana, Oceanogr. Rep., no. 6, March 10, 1930,

p. 57. Type Thysanactis denter Regan and Trewavas, monotypic.

Body elongate. Mouth cleft straight, jaws rather strong. Teeth tapering to sharp point; upper first moderate and fixed, second long, depressible, followed by 2 or 3 outer small fixed teeth and 1 inner depressible tooth; small lower fixed tooth in front, followed by strong fixed anterior fang, next an inner depressible tooth and 4 to 6 smaller fixed teeth;

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maxillary with or without few
erect teeth and with series of small
oblique teeth; pair of teeth on vomer
and 1 on each palatine; 2 or 3 pairs
on basibranchials; teeth on gill
arches in pairs. Dorsal rays 17 or 18.
Anal rays 21 to 25, origin little before
dorsal origin. Pectoral rays 1 + 10 or 11,
isolated ray produced. Ventral rays
7, well postmedian.

Thysanactis dentex Regan and Trewavas

Thysanactis dentex Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 58, fig. 35 (end of barbel),

fig. 36 (pectoral ray), pl. 2, fig. 1. N. $23^{\circ}36'$

W. $51^{\circ}17'$; N. $12^{\circ}11'$ W. $57^{\circ}12'$; N. $13^{\circ}47'$ W. $61^{\circ}26'$

west of St. Lucia; N. $15^{\circ}08'$ W. $61^{\circ}31'$ off Dominica;

N. $17^{\circ}41'$ W. $60^{\circ}58'$ east of Barbuda; 300 to 3000

meters.

Depth 9 to 12; head 7 to $8\frac{1}{2}$. Eye 4 to 5
in head; barbel long as head,
pigmented with anterior and posterior
series of white spots that become
continuous streaks terminally; tip white,
tapering, bearing minute rounded terminal

1001

body; white part with double series of short filaments, anterior and posterior, near basal end of each series longer filament, directed terminally and extending beyond end of barbel.

Postocular luminous organ small. Lateral photophores 30 to 32 between gill opening and ventral, 14 to 16 between ventral and anal. Ventral series 20 between isthmus and pectoral, 31 or 32 between pectoral and ventral, 14 to 16 between ventral and anal, 11 or 12 between anal and caudal.

D. 17 or 18; A. 21 to 25; pectoral 1 + 10 or 11 rays, isolated ray longer than head, $\frac{1}{14}$ to $\frac{1}{5}$ length of fish, pigmented, terminally with tassel of 5 or 6 long unpigmented filaments; ventral 17.

Length 139 mm. without caudal.

(Regan and Trewavas.)

Western Atlantic, Caribbean Sea.

Genus Leptostomias Gilbert

Leptostomias Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 606.

Type Leptostomias macronema Gilbert, monotypic.

Body elongate. Head short. Mouth straight, oblique, jaws rather strong. Teeth taper to sharp point; first upper tooth moderate and fixed, second long, depressible, followed by few small fixed outer teeth and 1 or 2 inner depressible; lower jaw with strong fixed fang each side of symphysis, posteriorly few small outer fixed teeth and

1 longer inner depressible tooth;
maxillary with few erect and
series of small oblique teeth. Pair
of teeth on vomer; 1 tooth on each
palatine; 2 pairs on basibranchials;
pairs of short teeth on gill arches.
Postocular luminous organ very
small. Dorsal rays 16 to 21. Anal
rays 20 to 28, begin below or
slightly before dorsal origin. Pectoral
rays 10 or 11, without isolated ray.
Ventral rays 7, well postmedian.

1004

Analysis of species

a. Stem of barbel without filaments near base.

b.¹ Ventral photophores between pectoral and ventral fins 41; barbel with series of minute filaments on basal part of bulb, extending on stem, with pairs of minute filaments on terminal part of bulb. haplocaulus.

b.² Ventral photophores between pectoral and ventral fins 45 or 46; barbel $\frac{1}{4}$ to $\frac{1}{3}$ length of fish; filaments of bulb probably as in adult of preceding species. gracilis.

b.³ Ventral photophores between pectoral and ventral 47; barbel nearly $\frac{2}{3}$ length of fish. macropogon.

b.⁴ Ventral photophores between pectoral and ventral 45 to 47; barbel nearly long as fish; bulb with minute slightly swollen filaments, not forming a regular

series.

1005-
longibarba.

b.⁵ 8 ventral photophores between pectoral and ventral 48; barbel nearly $\frac{3}{4}$ length of fish.

bermudensis.

c.¹ Bulb of barbel without pair of filaments arising from near its base.

d.¹ Bulb of barbel without filaments or appendages; pair of filaments near base of stem of barbel.

e.¹ Dorsal rays 16; Anal 20. macronema.

e.² Dorsal rays 20; Anal 25. leptobolus.

d.² Bulb of barbel with 1 or 2 minute filaments or tubercles near tip.

f.¹ Dorsal rays 21; Anal 28; stem of barbel with basal filament; bulb obliquely truncated, with 1 tubercle.

f.² Dorsal rays 21; Anal 26; stem of barbel with basal filament and 2 pairs of short fine filaments below truncated bulb, with 2 tubercles. analysis.

series.

1005-
longibarba.

a.² Stem of barbel with 1 or more filaments near base.

c.¹ Bulb of barbel without pair of filaments arising from near its base.

d.¹ Bulb of barbel without filaments or appendages; pair of filaments near base of stem of barbel.

e.¹ Dorsal rays 16; Anal 20. macronema.

e.² Dorsal rays 20; Anal 25. leptobolus.

d.² Bulb of barbel with 1 or 2 minute filaments or tubercles near tip.

f.¹ Dorsal rays 21; Anal 28; stem of barbel with basal filament; bulb obliquely truncated, with 1 tubercle.

f.² Dorsal rays 21; Anal 26; stem of barbel with basal filament and 2 pairs of short fine filaments below truncated bulb, with 2 tubercles. analis.

1006
problematicus.

c.² Bulb of barbel with 1 or 2 pairs of well developed filaments arising from near its base; Dorsal rays 19 or 20; Anal 23 to 25.

g.¹ Bulb of barbel broadly rounded terminally. gladiator.

g.¹ Bulb of barbel with narrow papilla like tip. ramosus.

Leptostomias haplocaulus Regan and Trewavas

Leptostomias haplocaulus Regan and Trewavas,
Danish Dana ^{Exped.} Oceanogr. Rep., no. 6, March

10, 1930, p. 59, fig. 37 (end of barbel).

Atlantic west of Bermudas, N. $33^{\circ}15'$ W. 68°

$20'$, in 200 meters.

Depth $13\frac{1}{2}$; head $9\frac{1}{2}$. Eye $5\frac{1}{2}$ in head; maxillary with oblique teeth, first 2 or 3 larger and nearly erect; barbel $3\frac{1}{4}$ of fish, stem black, without filaments or appendages except just basal to bulb; bulb $3\frac{1}{5}$ of head, slightly curved, narrow at tip; series of 8 minute filaments on terminal part of stem and basal half of convex

side of bulb; 4 pairs of minute filaments on terminal half of bulb.

Lateral photophores 41 between gill opening and ventral, 20 between ventral and anal; ventral series 10 between isthmus and pectoral, 41 between pectoral and ventral, 21 between ventral and anal, 11 between anal and caudal.

D. 19; A. 23; pectoral rays 10; ventral rays 7.

Length 100 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Leptostomias gracilis Regan and Trewavas
Leptostomias gracilis Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 59, fig. 38 (end of barbels).
 N. $15^{\circ}50'$ W. $26^{\circ}32'$ off Cape Verde Islands,
 1000 meters; N. $13^{\circ}35'$ W. $30^{\circ}11'$, 300 meters.

Depth 13; head $8\frac{3}{4}$ to $9\frac{1}{2}$. Eye 6
 in head; maxillary with 1 or 2 erect
 teeth, rest oblique; barbel $\frac{1}{4}$ to little
 over $\frac{1}{3}$ fish, stem black without
 filaments; slender bulb narrower at
 tip, 2 in head, -generally with 1 or
 series of minute filaments on basal
 half and sometimes pair terminally.
 Lateral photophores 43 to 45 between

isthmus and ventral, $2\frac{1}{2}$ between ventral and anal; ventral series 10 between isthmus and pectoral, 45 or 46 between pectoral and ventral, $2\frac{1}{2}$ between ventral and anal, 12 or 13 between anal and caudal.

D. 19; A. 23 or 24; pectoral rays 10; ventral rays 7.

Length 75 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Leptostomias macropogon horman

Leptostomias macropogon horman,
Discovery Rep., vol. 2, 1930, p. 311, fig. 20.

S. $35^{\circ}01'E$, $10^{\circ}18'$, 55 meters, South Atlantic

Depth $13\frac{3}{4}$; head $9\frac{4}{5}$. Snout $3\frac{1}{8}$ in head from snout tip; eye $4\frac{1}{2}$, $1\frac{1}{4}$ in snout; maxillary extends $\frac{3}{4}$ an eye diameter behind eye, length $1\frac{1}{3}$ in head from snout tip; maxillary with oblique teeth, first 2 or 3 larger and nearly erect; barbel $1\frac{3}{5}$ in body without caudal, basal part of stem black, terminal part with white spots and patches which become larger nearer bulb and finally unite to cover black part completely; no filaments or appendages except just basal to bulb, which about $\frac{3}{5}$ of head, slightly curved, narrow at tip; series of 4 very small filaments on terminal part of stem and basal half of convex side of bulb, 2 pairs of similar filaments on terminal part of bulb and between these another filament, to which attached

minute bulb at end of very fine stem; interorbital low.

Very small infraocular luminous organ. Lateral photophores 45 between gill openings and ventrals, 22 between ventral and anal; ventral series 10 between isthmus and pectoral, 47 between pectoral and ventral, 22 between ventral and anal, 11 between anal and caudal.

D. 20, fin height $2\frac{1}{5}$ in total head; A. 25, fin height 3; caudal $1\frac{4}{5}$; least depth of caudal peduncle 5; pectoral $1\frac{1}{2}$, rays 10; ventral $1\frac{1}{5}$ in head, rays 7.

Length 16.5 mm.

(Norman.)

South Atlantic.

Leptostomias longibarba Regan and Trewavas

Leptostomias longibarba Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 60, fig. 39 (end of barbel),

pl. 1, fig. 3. N. $8^{\circ}19'W$, $44^{\circ}35'$, 300 meters; N. 24°

$44'W$, $22^{\circ}32'$, 100 meters; N. $35^{\circ}18'W$, $6^{\circ}51'$, 250

meters.

Depth 13 to $14\frac{1}{2}$; head 9 to $10\frac{1}{2}$. Eye
5 in head; maxillary with 1 to 3 erect
and series of minute oblique teeth;
barbel nearly long as fish, reaching
beyond anal origin; black stem
without filaments; long bulb $\frac{3}{5}$ of
head, tapering, with minute slightly
swollen filaments.

Lateral photophores 44 to 46 between gill opening and ventral, 22 or 23 between ventral and anal; ventral series 10 between isthmus and pectoral, 45 to 47 between pectoral and ventral, 22 or 23 between ventral and anal, 11 or 12 between anal and caudal.

D. 21; A. 24 to 26; pectoral rays 10 or 11; ventral 7.

Length 250 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

1015

Leptostomias bermudensis Beebe

Leptostomias bermudensis Beebe,
Zoologica N.Y. Zool. Soc., vol. 13, no. 4,
March 1932, p. 59, fig. 10 (end of
barbel). Seven $\frac{1}{2}$ miles southeast of
Honsuch, Bermuda, 500 fathoms.

Depth $15\frac{4}{5}$; head 11. Snout $2\frac{1}{5}$ in
head; eye 6; maxillary $1\frac{2}{3}$; 5 pairs
of upper teeth, second largest and
several small teeth, 4 to 6 denticles on
maxillary and lower dentition similar;
barbel nearly $\frac{3}{4}$ length of body,
unbranched except base of bulb, black
basally; bulb slender, slightly curved,
cucumber shaped, with 3 short thin
median filaments as 1 from back of
stem and 2 others from basal part of
bulb, half way in bulb pair of
larger filaments, another still anterior
and then pair subterminal.

Lateral photophores 48 between
gill opening and ventral, 22 between
ventral and anal; ventral series
10 between isthmus and pectoral, 48

between pectoral and ventral, $\frac{1}{2}$ 1
between ventral and anal, 12
between anal and caudal.

D. 20; A. 25; pectoral rays 12;
ventral rays 7.

Length 297 mm. (Beebe.)

Bermuda.

Leptostomias macronema Gilbert

Leptostomias macronema Gilbert, Bull.

U.S. Fish Comm., vol. 23, pt. 2, 1903 (1905),

p. 607, pl. 72, fig. 3. Near Niuhau in 319 to

451 fathoms. — Fowler, Mem. Bishop Mus.,

Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 60 (compiled).

vol. 10, 1928, p. 34 (type). — Regan and Trewavas,

Melanostomias macronema Parr, Bull.

Bingham Oceanogr. Collection, vol. 3, art. 2,
December 30, 1927, p. 49 (type).

Depth 13; head $7\frac{1}{5}$, width $2\frac{3}{4}$.

Snout $2\frac{1}{2}$ in head from snout tip;
eye 5, $1\frac{4}{5}$ in snout, subequal with
interorbital; maxillary extends $\frac{1}{2}$ eye
diameter behind eye, length $1\frac{1}{3}$ in
head from snout tip; teeth uneven,

7 or 8 on each premaxillary and mandibular ramus, longest near front of jaw correspond to pair slightly shorter in mandible; single slender tooth on extreme outer angle of vomer each side and similar tooth near middle of each palatine; pair of teeth on tongue; barbel inserted on mandible before eye, length $1\frac{2}{3}$ in combined head and body to caudal base, expanded subterminally; interorbital 5, little convex. Gill rakers $3+9$, short, slender denticles, little longer than gill filaments or 2 in eye.

Four small photophores on head;

1 short curved bar on hind edge of orbit, others small round spots as 1 on subopercle, 1 near maxillary tip, 1 near mandibular angle. Series of photophores on branchiostegal membranes, 1 for each interradial space. Lateral row of photophores well below middle of sides, ⁶³ extend from head to opposite front of anal; lower or ventral row 4½ before ventral, 16 between ventral and anal, 8 opposite anal and 6 on caudal peduncle.

D. 16, first ray $2\frac{1}{8}$ in total head length; A. 20, fin height $2\frac{1}{10}$; caudal damaged, small, forked;

pectoral $2\frac{1}{4}$, rays 7; ventral $1\frac{4}{5}$,
rays 8; least depth of caudal peduncle
equals eye.

Blackish. Barbel black on basal
half, terminally pale. Iris neutral
black. Fins whitish.

Pacific Ocean.

52056 U.S.N.M.

near Nihaun, Hawaiian Islands.

Albatross Collection 4177. Length 74 mm.

Type.

Leptostomias leptobolus Regan and Trewavas

Leptostomias leptobolus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 60, fig. 40^b (ends of barbels).

Caribbean Sea off Dominica N. $15^{\circ}08'$ W. $61^{\circ}31'$,

300 meters; east of Barbuda N. $17^{\circ}41'$ W. $60^{\circ}58'$,

100 to 300 meters.

Depth 13; head $8\frac{1}{2}$ to 9. Eye 6 in head; maxillary with 3 or 4 small erect teeth followed by series of minute oblique teeth; barbel $\frac{3}{5}$ to nearly $\frac{3}{4}$ of fish, pair of filaments near base, elongate bulb without filaments or appendages.

Lateral series of photophores

42 or 43 between gill opening and ventral, 20 between ventral and anal; ventral series 10 between isthmus and pectoral, 43 between pectoral and ventral, 20 between ventral and anal, 12 or 13 between anal and caudal.

D. 20; A. 25; pectoral rays 10; ventral 7.

Length 95 mm. without caudal.

(Regan and Trewavas.)

Atlantic, Caribbean Sea.

Leptostomias analis Regan and Trewavas

Leptostomias analis Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 61, fig. 40 (end of barbel).

Caribbean Sea north of St. Croix N. $17^{\circ}43.4'$ W.

$64^{\circ}54.3'$, 600 meters.

Depth 14; head nearly 9. Eye $5\frac{1}{2}$
in head; maxillary with series of
small teeth, first 4 erect, rest oblique;
barbel nearly long as fish, stem
black, with minute luminous dots
but no patches, giving off slender
black filament near base, white bulb
elongate, obliquely truncated, with
minute tubercle near tip.

Lateral photophores 40 between gill opening and ventral, 22 between ventral and anal; ventral series 10 between isthmus and pectoral, 40 between pectoral and ventral, 22 between ventral and anal, 14 between anal and caudal.

D. 21; A. 28; pectoral rays 10; ventral 8.

Length 168 mm. without caudal.

(Regan and Trewavas.)

Western Atlantic.

1025-

Leptostomias problematicus (Parr)

Melanostomias problematicus Parr, Bull.
Brigham Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, p. 46, figs. 26 & 28a. N. $23^{\circ}42'$
W. $76^{\circ}43'$, 7000 feet.

Leptostomias problematicus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 61, fig. 41a (end of barbel).
(compiled).

Depth 17; head $9\frac{1}{2}$. Barbel nearly $\frac{2}{3}$
fish, filament near base, 2 pairs of
small filaments just below bulb;
bulb truncated terminally and bears 2
minute tubercles at end.

Ventral photophores 11 between isthmus and pectoral, 42 between pectoral and ventral, 20 between ventral and anal, 13 between anal and caudal.

D. 21; A. 26.

Length 172 mm. without caudal.
(Regan and Trewavas.)

Western Atlantic.

Leptostomias gladiator (Zugmayer)
hematostomias gladiator Zugmayer, Bull.
 Inst. Océanogr. Monaco, no. 193, Jan. 20,

1911, p. 5. N. $44^{\circ}19'$ W. $11^{\circ}19'$, 4900 meters;
 Bay of Biscay; Rés. Camp. Sci. Monaco,
 vol. 35, 1911, p. 76, pl. 3, fig. 5 (type).

Melanostomias gladiator Parr, Bull. Bingham
 Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,
 p. 48, fig. 28b (compiled).

Leptostomias gladiator Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 61, fig. 41b (compiled).

Depth $12\frac{3}{4}$; head $8\frac{1}{2}$. Barbel $\frac{1}{2}$
 fish, filament near base, pair not
 far below bulb, 2 pairs of short

swollen filaments close below bulb;
bulb cigar-shaped, end broadly
rounded, with pair of long basal
filaments and 3 short swollen
filaments near tip.

Ventral photophores 11 between
isthmus and pectoral, 40 between
pectoral and ventral, 21 between
ventral and anal, 13 between anal
and caudal.

D. 20; A. 24. Length 270 mm. without
caudal.

(Regan and Trewavas.)

Eastern Atlantic.

Leptostomias ramosus Regan and Trewavas

Leptostomias ramosus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 61, fig. 42 (barbels).

N. $25^{\circ}07'$ W. $19^{\circ}20'$; N. $29^{\circ}15'$ W. $59^{\circ}45'$; N. $29^{\circ}19'$
W. $57^{\circ}43'$; N. $31^{\circ}06'$ W. $41^{\circ}45'$; N. $31^{\circ}39'$ W. $53^{\circ}23'$;
N. $28^{\circ}47'$ W. $20^{\circ}45'$; N. $26^{\circ}15'$ W. $20^{\circ}53'$; N. $21^{\circ}57'$ W.
 $22^{\circ}58'$; N. $35^{\circ}51'$ W. $66^{\circ}43'$; N. $37^{\circ}40'$ W. $26^{\circ}00'$;
N. $39^{\circ}26'$ W. $21^{\circ}51'$; 150 to 1000 meters.

Depth 10 to 13; head $7\frac{1}{2}$ to $8\frac{1}{2}$. Eye 5 to 6
in head; maxillary with series of small
oblique teeth, anterior 2 or 3 sometimes
erect; barbel $\frac{1}{3}$ (young) to nearly $\frac{1}{2}$
of fish, black stem with luminous
patches; near base 1 or 2 pairs of

filaments, usually unpaired one;
other filaments on stem, including pair
not far below bulb; white bulb

generally more than $\frac{1}{2}$ head, slender,
with narrow papilla like tip, bearing
1 or 2 pairs of stout filaments near
base, 1 to 3 short swollen filaments,
often pair near tip and another little
behind.

Lateral photophores 39 to 42 between
gill opening and ventral, 20 to 22 between
ventral and anal; ventral series 10 or
11 between isthmus and pectoral, 39 to 43
between pectoral and ventral, 21 or 22
between ventral and anal, 11 or 12 between
anal and caudal.

D. 19 or 20; A. 23 to 25; pectoral rays
7; ventral 7.

Length 180 mm. without caudal.
(Regan and Trewavas.)
Atlantic.

1031

Genus Grammatostomias Goode and Bean

Grammatostomias Goode and Bean, Oceanic
Ichth., 1895, p. 110. Type Grammatostomias
dentatus Goode and Bean, monotypic.

Mouth cleft straight. Teeth
acute; first upper moderate and
fixed, second long and depressible;
posteriorly in each jaw an outer
fixed tooth and series of depressible
teeth; maxillary with row of small
oblique teeth. Row of teeth on each
palatine and 3 pairs of basibranchials.
Dorsal rays 20. Anal rays 24, begins
below dorsal origin. Pectoral rays
5. Ventral rays 7, premedian.

Grammatostomias dentatus (Goode and Bean)

Grammatostomias dentatus (Goode and Bean), Oceanic Ichth., 1895, p. 110, pl. 35,

fig. 133. N. $38^{\circ}19'20''$ W. $69^{\circ}02'30''$, 2069

fathoms. — Jordan and Evermann, Bull. U. S.

Nat. Mus., no. 47, pt. 1, 1896, p. 590 (compiled).

— Parr, Bull. Bingham Oceanogr. Collection,

vol. 3, art. 2, Dec. 30, 1927, p. 92, figs. 10 and

52 (type). — Regan and Trewavas, Danish

Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930,

p. 63 (compiled).

Depth $8\frac{1}{2}$; head 6, width $2\frac{1}{2}$.

Snout $4\frac{1}{2}$ in head; eye $4\frac{1}{2}$, subequal

with snout, $1\frac{1}{3}$ in interorbital;

maxillary extends $2\frac{2}{3}$ eye diameters

behind eye, length $1\frac{1}{10}$ in head from snout tip; first upper tooth $1\frac{3}{5}$ in eye, second equals $1\frac{1}{4}$ eye diameters, first lower tooth equals $1\frac{4}{5}$ eye diameters; row of 4 teeth on each palatine; 3 pairs of teeth on tongue; long slender barbel, inserted before eye, reaches (broken) more than half way in space between bases of pectoral and ventral; interorbital $3\frac{7}{8}$, convex. Gill rakers 8 small short spines on lower branch of first arch; gill filaments $1\frac{3}{4}$ in eye.

Moderate suborbital luminous body half size of eye, close above

maxillary and behind eye; minute
conspicuous orbital photophore at
lower eye edge medially. Lower
lateral photophores from gill opening
to ventral 15 or 16, anal to ventral
22 with last 2 above anal fin base,
anal to caudal 12; ventral row
from isthmus to pectoral 7, pectoral
to ventral 16, ventral to anal 21.

D. 20, fin height $2\frac{1}{2}$ in total
head length; A. 24, fin height $2\frac{1}{4}$;
caudal 3?, damaged, small; pectoral
4?, rays 5; ventral $2\frac{1}{5}$, rays 7;
least depth of caudal peduncle
 $1\frac{1}{2}$ in eye.

Pale brown generally, evidently
largely dusky to blackish when
fresh. Iris neutral dusky. Fins
pale to whitish.

Atlantic Ocean.

37370 U.S.N.M. N. $38^{\circ}19'20''$ W. $69^{\circ}2'$
 $30''$. In 2069 fathoms. Albatross Station
25-65. Length 153? mm. Type.

Genus Lamprotoxus Holt and Byrne
Lamprotoxus Holt and Byrne, Rep. Agric.
Ireland Fisher. Br. Sci. Investigations,
No. 1, 1913, p. 7. Type Grammatostomias
flagellibarba Holt and Byrne, monotypic.

Moderately elongate. Mouth cleft
straight. Teeth acute, larger
slightly barbed; upper first tooth
moderate, fixed, second long and
depressible; lower first tooth long;
behind upper 2 teeth few smaller
teeth, fixed and depressible alternating,
in lower jaw outer fixed tooth and
inner series of depressible teeth;
maxillary with series of small

Genus Lamprotoxus Holt and Byrne
Lamprotoxus Holt and Byrne, ~~Liskenish~~
~~Invertig, Ireland,~~

oblique teeth. Vomer toothless; 2
teeth on each palatine; 2 pairs
on basibranchials; pairs of teeth
on gill arches. Closed loop of
luminous tissue on each side of
body between head and pelvic
region, with thicker zig-zag part
at front end of lower line. Dorsal
rays 18 to 21. Anal rays 20 to 23,
begin below dorsal origin. Pectoral
rays 4 to 11, one or more rays fleshy.
Ventral rays 7, little premedian.

1038

Analysis of species

a.¹ Short backward projection at front end of zig-zag part of closed loop of luminous tissue on each side of body; pectoral rays 2 or 3, thick, fleshy.

b.¹ Pectoral rays 10. flagellibarba.

b.² Pectoral rays 4 to 6. paucifilis.

a.² Short forward projection or hook at anterior end of zig-zag part of closed loop of luminous tissue on each side of body; pectoral rays 10 or 11, with 1 thick fleshy ray phalanobrochus.

a.³ Long luminous line from behind shoulder-girdle to dorsal and anal, with short downward anterior hook; second labial line from snout half way along jaw, curved luminous line from eye to middle of upper jaw; pectoral rays 5. angulifer.

Lamprotopus flagellibarba (Holt and Byrne)

Grammatostomias flagellibarba Holt and Byrne,
Ann. Mag. Nat. Hist., ser. 8, vol. 6, 1910, p. 295.

N. $51^{\circ}20'$ W. $11^{\circ}56'$, 736 fathoms, off south
west Ireland.

Lamprotopus flagellibarba Holt and Byrne,

Dep. Agric. Ireland Fisher. Br. Sci.

Investigations, no. 1, 1913, p. 8, pl. 1 (type).

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, p. 93 (N. $23^{\circ}58'$

W. $77^{\circ}26'$, 7000 feet). — Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 63, figs. 43 and 44a (type).

Depth $6\frac{1}{2}$; head $5\frac{3}{4}$. Snout 6
in head; eye $7\frac{1}{2}$, $1\frac{2}{3}$ in snout;

maxillary extends $4\frac{1}{2}$ eye diameters behind eye, length $1\frac{1}{10}$ in head from snout tip; barbel 6 times fish; interorbital rather low.

Postorbital luminous organ narrow, little shorter than eye. Zig-zag part of luminous lateral loop with small backward projection anteriorly and 3 downward angles. Luminous dots aggregated especially below zig-zag part of loop and on opercle. Lateral photophores 17 between gill opening and ventral, 20 between ventral and anal; ventral series 6 between isthmus and pectoral, 16 between pectoral and ventral, 19 between ventral and anal, 10 between anal and caudal.

D. 21, fin height $2\frac{1}{10}$ in total head; A. 23, fin height $2\frac{1}{3}$; pectoral rays 10, second and third thick and fleshy, length $2\frac{1}{3}$ in head; ventral $1\frac{1}{6}$, rays 7, slightly premedian.

Length 168 mm. without caudal.

1041

(Regan and Trewavas.)

Atlantic.

Lamprocyx paucifilis Regan and Trewavas

Lamprocyx paucifilis Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 64, fig. 44b (luminous loop).

N. $25^{\circ}49'$ W. $51^{\circ}55'$, 200 meters; N. $31^{\circ}06'$ W.

$41^{\circ}45'$, 300 meters.

Depth $6\frac{2}{3}$; head $5\frac{2}{3}$. Eye 6 in head; maxillary teeth very small; barbel half fish (probably broken).

Postorbital luminous organ small. Lateral luminous loop as in Lamprocyx flagellibarba, zig zag part thicker, with 4 downward angles. Lateral photophores 18 between gill opening and ventral, 21 or 22 between ventral and anal; ventral series 7 between isthmus and pectoral, 17 between pectoral and ventral, 21 or 20 between ventral and anal, 11 between anal and caudal.

D. 18 or 19; A. 22; pectoral rays 4 to 6, with 2 fleshy rays, ventral rays 7, nearer snout end than caudal base.

Length 49 mm. without caudal. (Regan and Trewavas).
Atlantic.

Lamprotopus phanobrochus Regan and Trewavas

Lamprotopus phanobrochus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,
March 10, 1930, p. 64, fig. 44 c (luminous loop).

N. $21^{\circ}27'$ W. $46^{\circ}52'$; N. $24^{\circ}46'$ W. $46^{\circ}06'$; west of
St. Lucia N. $13^{\circ}47'$ W. $61^{\circ}26'$; east of Barbuda

N. $17^{\circ}41'$ W. $60^{\circ}58'$; 150 to 4000 meters.

Depth 7 to $8\frac{1}{2}$; head $5\frac{1}{2}$ to 6. Eye 6 in head;
barbel?

Postocular luminous organ small.
Luminous lateral loop as in Lamprotopus
flagellibarba, zig zag part thicker, with
short hook or projection forwards at
anterior end. Lateral photophores 16
or 17 between gill opening and ventral,
21 or 22 between ventral and anal;
ventral series 7 between isthmus and
pectoral, 17 between pectoral and
ventral, 20 to 22 between ventral and
anal, 10 to 12 between anal and caudal.

D. 18 to 20; A. 20 to 24; pectoral rays 9
to 11, with 1 fleshy ray; ventral rays 7,
nearer snout end than caudal base.

Length 43 mm. without caudal.¹⁰⁴⁴
(Regan and Trewavas.)

Atlantic, Caribbean Sea.

1045

Lamprotopus angulifer Beebe

Lamprotopus angulifer Beebe, Zoologica
N. Y. Zool. Soc., vol. 12, No. 4, March
1932, p. 56, fig. 9. Fifteen miles
southeast of Hansuch, Bermuda,
500 fathoms.

Depth $7\frac{1}{2}$ to 8; head $5\frac{4}{5}$. Snout
 $5\frac{4}{5}$ in head; eye 9, $2\frac{1}{2}$ in snout;
maxillary extends far beyond eye,
but slightly less than head; pre-
maxillary with long strong pair of front
fangs, then 5 pairs of teeth outside
dental ridge with first and fifth
twice long as others, along ridge 10
teeth each side with anterior pair
very long; front pair of mandibular
teeth longest of teeth, then 2 more pairs
of fangs outside dental line in which
15 variable teeth each side; 3 pairs
of small palatine teeth; barbel broken.

Postorbital luminous body long as
eye. Lateral photophores 16 between
gill opening and ventral, 22 between

ventral and anal, 12 between anal and caudal; ventral series 7 between isthmus and pectoral, 17 between pectoral and ventral, 19 between ventral and anal.

D. 21, fin height $2\frac{1}{3}$ in ^{total} head; A. 19, fin height $2\frac{2}{3}$; caudal $1\frac{2}{3}$; least depth of caudal peduncle 5; pectoral 2, rays 5; ventral rays 7, length $1\frac{2}{5}$ in head.

Black. Length 155 mm. (Beebe.)

Bermuda.

Genus Bathophilus Giglioli

Bathophilus Giglioli, Tip. Roy. Inst.

Nord. Inst. Genova, 1884, p. 261. Type

Bathophilus nigerrimus Giglioli,

monotypic; Nature, vol. 27, 1883, p. 399.

(No diagnosis or description.)

Dactylostomias Garman, Mem. Mus. Comp.

Zool., vol. 24, 1899, p. 279. Type

Dactylostomias filifer Garman, monotypic.

Trichostomias Zugmayer, Bull. Inst.

Océanogr. Monaco, no. 193, Jan. 20, 1911, p. 6.

Type Trichostomias vaillanti Zugmayer,
monotypic.

Gnathostomias Pappenheim, Deutsche

Südpolar Exped., band 15, Zool. vol. 7, 1914,

p. 171. Type Gnathostomias longifilis
Pappenheim, monotypic.

† Heteropodichthys Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 65. Type Bathophilus
brevis Regan and Trewavas, monotypic.

Trichochirus Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 65. Type Bathophilus
pawneeii Parr.

not barbed. Remaxillaries with
 front pair of fixed teeth followed
 each side by row of unequal
 depressible teeth, first rather
 long and extending downward over
 lower jaw; maxillary with
 series of small oblique teeth;
 lower jaw each side with rather
 strong anterior and smaller lateral

p. 171. Type Gnathostomias longifilis
Pappenheim, monotypic.

Body deep and compressed (B. brevis) to slender and rounded (B. filifer). Eyes below oval opening in skin, generally partly concealed, very variable, usually appear small. Mouth cleft straight. Teeth all simple, acute, not barbed. Premaxillaries with front pair of fixed teeth followed each side by row of unequal depressible teeth, first rather long and extending downward over lower jaw; maxillary with series of small oblique teeth; lower jaw each side with rather strong anterior and smaller lateral

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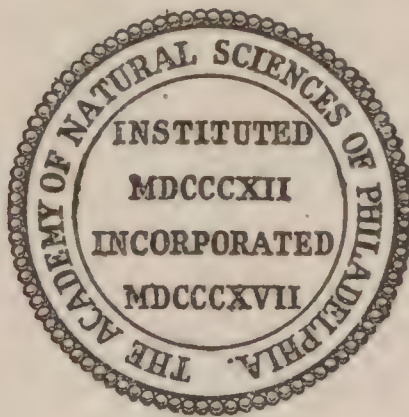
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fixed tooth and ^{an} inner series of
depressible teeth. Vomer toothless;
1 or 2 (rarely more) teeth on each
palatine and 2 pairs on basibranchials;
gill arches toothless. Barbel long,
slender, tapering. Dorsal and
anal subequal, rays 9 to 18. Paired
^{long,} fins, with slender rays, some or all
of which may be free; pectoral
rays 1 to 47; ventral 4 to 26, usually
inserted just above lateral series
of photophores, sometimes higher.

The serial photophores are said to be difficult to count except in faded specimens though the smaller photophores are conspicuous over the whole surface, producing a granular aspect. Skin often with a metallic luster though dull blackish and lustrous specimens are found in the same species.

Analysis of species

a. Depth $2\frac{1}{4}$ to 6.

b. Notopodichthys. Ventrals much nearer dorsal than ventral profile; depth $2\frac{1}{4}$ to $2\frac{3}{4}$; pectoral rays 11 to 13; ventral 11 to 14. brevis.

b. Bathophilus. Ventral midway between dorsal and ventral profiles.

c. Depth 5 to 6; pectoral rays 34 to 47; ventral 18 to 16. nigerrimus.

c. Depth 6; pectoral rays 16 to 19; ventral 16. proximus.

a. Depth $6\frac{1}{2}$ to 12.

d. Trichostomias. Pectoral rays in 2 well separated groups.

e. Pectoral rays 3 to 6 + 7 to 11.

f. Ventral rays 7 to 10. longipes.

f. Ventral rays 21. irregularis.

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e.² Pectoral rays 3 + 4 or 5.

g.¹ Ventral rays 16 to 20. schizochirus.

g.² Ventral rays 9. digitatus.

e.³ Pectoral rays 2 + 1 or 2; ventral
4 to 6.

h.¹ Dorsal rays 13 to 15; anal
13 to 16. metallicus.

h.² Dorsal rays 11; anal 12.
vaillanti.

d.² Gnathostomias. Pectoral rays
4 to 8, first 2 or 3 stronger than rest.

i.¹ Pectoral rays 6 to 8; ventral
11 to 14. longipinnis.

i.² Pectoral rays 5; ventral
9. ater.

i.³ Pectoral rays 4; ventral
16. indicus.

d.³ Trichochirus. Pectoral of 2
separate rays inserted close together.

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f.¹ Ventral rays 11 to 13.
paucic.

f.² Ventral rays 9 or 10.
melas.

f.³ Ventral rays 6 to 8.
chironema.

d.⁴ Dactylostomias. Pectoral single
ray; ventral rays 4 or 5. filifer.

Bathophilus brevis Regan and Trewavas

Bathophilus brevis Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 66, pl. 3, fig. 1. N. $13^{\circ}35'$
 W. $30^{\circ}11'$; off French Guiana N. $5^{\circ}06'$ W. $51^{\circ}35'$;
 N. $34^{\circ}40'$ W. $33^{\circ}16'$; N. $30^{\circ}53'$ W. $54^{\circ}07'$; west
 of Bermudas N. $33^{\circ}15'$ W. $68^{\circ}20'$; 400 to 1000 meters.

Depth $2\frac{1}{4}$ to $2\frac{3}{4}$, ovate, compressed;
 head $2\frac{2}{5}$ to 3. Snout $3\frac{3}{4}$ in head; eye
 $8\frac{1}{3}$, $2\frac{1}{4}$ in snout; maxillary extends
 $4\frac{3}{4}$ eye diameters behind eye; length
 $1\frac{1}{8}$ in head; interorbital moderately
 high.

Postocular luminous organ, well
 separated from eye close above maxillary
 midway in head length, also small
 luminous patch anteriorly or below.
 Luminous patch on middle of side
 between dorsal and anal fin origins.
 No serial photophores.

D. 10 or 11, seventh ray $1\frac{7}{8}$ in head;
 A. 9 or 10, sixth ray $2\frac{1}{10}$; caudal $1\frac{1}{4}$.

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forked; least depth of caudal peduncle 5; pectoral rays 2 + 9 to 11, $1\frac{2}{3}$ in body without caudal; ventral $2\frac{3}{5}$, rays 11 to 14, inserted much nearer dorsal than ventral profile, equidistant between snout tip and dorsal origin. Length 44 mm. to caudal base. (Regan and Trewavas)

Atlantic Ocean.

Bathophilus nigerrimus Giglioli

Bathophilus nigerrimus Giglioli, Tip.

Roy. Inst. Sordo Muti (Genova), 1884, p. 261.

Messina; Nature, vol. 27, 1882, p. 199

(Messina; no description). — Günther,

Rep. Voy. Challenger, vol. 22, 1887, p. 215

(compiled). — Goode and Bean, Oceanic

Ichth., 1895, p. 111, pl. 36, fig. 136 (compiled).

— Sanzo, Mem. R. Com. Talass. Ital.

Venice, 1915, p. (larva). — Balducci,

Ann. Inst. Oceanogr. Monaco, vol. 7, fasc.

3, 1915, p. 1, pl. 1 (). —

Parr, Bull. Bingham Oceanogr. Collection,

vol. 3, art. 2, Dec. 30, 1927, p. 86 (compiled). —

Regan and Trewavas, Danish Alana Exped.

Oceanogr. Rep., No. 6, March 10, 1930, p. 66,
 pl. 3, fig. 2 (Messina; N. $37^{\circ}28'$ E. $8^{\circ}8'$;
 N. $32^{\circ}16'$ E. $26^{\circ}03'$; N. $28^{\circ}49'$ W. $54^{\circ}10'$; N. $35^{\circ}50'$ W.
 $44^{\circ}55'$; N. $28^{\circ}06'$ W. $55^{\circ}16'$; N. $25^{\circ}34'$ W. $46^{\circ}06'$; N. 24°
 $46'$ W. $46^{\circ}06'$; N. $21^{\circ}57'$ W. $22^{\circ}58'$; east of Barbuda
 N. $17^{\circ}41'$ W. $60^{\circ}58'$; Gulf of Mexico N. $23^{\circ}58'$ W. $83^{\circ}22'$;
 between Florida and Cuba N. $23^{\circ}13'$ W. $82^{\circ}21'$;
 Florida Strait N. $24^{\circ}30'$ W. 80° ; near St. Croix N. 17°
 $43'$ W. $64^{\circ}56'$; west of Bermudas N. $33^{\circ}15'$ W. $68^{\circ}20'$;
 N. $37^{\circ}44'$ W. $25^{\circ}56'$; 25 to 1000 meters).

Depth 5 to 6; head 4 to $4\frac{1}{2}$. Snout
 $3\frac{1}{4}$ in head; eye 7, 2 in snout;
 maxillary extends $4\frac{1}{4}$ eye diameters
 behind eye, length $1\frac{1}{8}$ in head;
 interorbital moderately high.

Postocular luminous organ long
 as eye, with small pearl like

protuberance below. Lateral photophores 13 between gill opening and ventral, 9 to 12 between ventral and anal; ventral series 4 or 5 between isthmus and pectoral, 12 or 13 between pectoral and ventral, 11 or 12 between ventral and anal, 5 between anal and caudal. Usually white spot behind ventral fin.

D. 13 to 15, fin height 2 in head; A. 13 to 15, fin height $1\frac{3}{4}$; caudal 2, forked, lower lobe little longer; least depth of caudal peduncle 6; pectoral rays 34 to 47, first 9 to 11 separate, others contiguous or joined by membrane near base and some rays with luminous expansions; length $3\frac{3}{4}$ in body without caudal; ventral $3\frac{1}{8}$, rays 18 to 26, above lateral photophores, origin equidistant between snout tip and caudal base or nearer caudal.

Length 62 mm. without caudal.

(Regan and Trewavas.)

Atlantic, Gulf of Mexico, Caribbean Sea, Mediterranean.

Bathophilus proximus Regan and Trewavas

Bathophilus proximus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 66, pl. 3, fig. 3. N. $35^{\circ}51'$

W. $66^{\circ}43'$, 1000 meters.

Depth $5\frac{2}{3}$; head $4\frac{4}{5}$. Snout $3\frac{2}{5}$
in head; eye $6\frac{1}{2}$, $1\frac{4}{5}$ in snout;
maxillary extends $2\frac{1}{2}$ eye diameters
behind eye, length $1\frac{1}{10}$ in head;
interorbital moderately low.

Postocular luminous organ large
as eye. Lateral series of photophores
10 between gill opening and ventral,
10 between ventral and anal; ventral
series 13 between pectoral and ventral,
13 between ventral and anal, 5
between anal and caudal.

D. 16, fin base $1\frac{2}{5}$ in head;
A. 16, fin base $1\frac{3}{5}$; caudal $1\frac{2}{5}$,
forked, lower lobe little longer;
least depth of caudal peduncle
 $6\frac{1}{5}$; pectoral $1\frac{1}{5}$, rays 16 to 19;
ventral $3\frac{2}{3}$ in body without caudal,
rays 16, inserted above lateral
photophores little nearer snout end
than caudal base.

Length 53 mm. without caudal.

(Regan and Trewavas.)

Atlantic, west of Bermuda.

Bathophilus longipes Regan and Trewavas

Bathophilus longipes Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 66, pl. 4 fig. 3. N. $20^{\circ}50'$ W.

$66^{\circ}30'$; N. $25^{\circ}34'$ W. $46^{\circ}6'$; N. 32° W. $20^{\circ}01'$; N. 32°

$55'$ W. $21^{\circ}51'$; off Dominica N. $15^{\circ}08'$ W. $61^{\circ}31'$;

south of Jamaica N. $16^{\circ}6'$ W. $76^{\circ}2'$; west of

Jamaica N. $18^{\circ}22'$ W. $78^{\circ}38'$; N. $18^{\circ}50'$ W. $79^{\circ}7'$;

Gulf of Mexico N. $22^{\circ}6'$ W. $84^{\circ}58'$; between Florida

and Cuba N. $23^{\circ}13'$ W. $82^{\circ}21'$; N. $23^{\circ}13'$ W. $82^{\circ}21'$;

N. $23^{\circ}13'$ W. $82^{\circ}21'$; Florida Strait N. $24^{\circ}30'$ W. 80° ;

near St. Croix N. $17^{\circ}43'$ W. $64^{\circ}56'$; N. $17^{\circ}45'$ W.

$64^{\circ}55.5'$; N. $17^{\circ}43'$ W. $64^{\circ}56'$; 300 to 1000 meters.

Depth $6\frac{1}{2}$ to 10; head $4\frac{1}{2}$ to 6.

Snout $3\frac{1}{3}$ in head; eye 10, 3 in snout;
maxillary extends $4\frac{1}{2}$ eye diameters

behind eye, length $1\frac{1}{10}$ in head; interorbital moderately low.

Postocular luminous organ nearly equals 2 eye diameters, with small white spot anteriorly below eye. Lateral photophores 14 to 16 between gill opening and ventral, 9 or 10 between ventral and anal; ventral series 5 between isthmus and pectoral, 17 between pectoral and ventral, 11 between ventral and anal, 5 between anal and caudal.

D. 13 to 16, fin height $2\frac{1}{5}$ in head; A. 13 to 16, fin height $2\frac{1}{8}$; caudal 2, well forked, lower lobe little longer; least depth of caudal peduncle 7; pectoral 1, rays 10 to 16 (3 to 6 + 7 to 11); ventral rays 7 to 10, $3\frac{4}{5}$ in body without caudal, origin equidistant between eye or postocular and caudal base.

Length 105 mm. without caudal.

(Regan and Trewavas.)
Atlantic, Gulf of Mexico, Caribbean Sea.

Bathophilus irregularis horman

Bathophilus irregularis horman,

Discovery Rep., vol. 2, 1930, p. 311, fig.

21. S. $32^{\circ}45'$ W. $8^{\circ}47'$, 650 meters, South Atlantic.

Depth $6\frac{1}{3}$; head $4\frac{1}{4}$. Snout $3\frac{1}{2}$ in head from snout tip; eye 6, $1\frac{3}{4}$ in snout; maxillary extends $3\frac{1}{4}$ eye diameters behind eye, length equals head from snout tip; 3 large canines on premaxillary with second and third passing outside lower jaw; uniformly small teeth along maxillary edge; 2 large front lower teeth, front one passing outside upper jaw; interorbital rather low.

Postocular organ little longer than eye, small white spot below anteriorly. Lateral photophores $10+3$ between gill opening and ventral, form ascending row with last 3 on back, 11 between ventral and anal

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forming curved row running from level of ventral fin upwards nearly to back and then down to same level; ventral series 5 before pectoral, 4 very small ones close together immediately behind pectoral, 2 close together little before ventral and 1 or 2 very small ones just behind ventral fin, 4 close together above vent and 5 behind anal.

D. 12, fin height $1\frac{4}{5}$ in total head; A. 16, fin height $1\frac{7}{8}$; caudal $1\frac{7}{8}$, forked, lower lobe little longer; least depth of caudal peduncle 6; pectoral rays 3 + 7, length $1\frac{1}{8}$ in total head length; ventral rays 21, inserted at middle of side little nearer caudal base than snout tip, length $3\frac{1}{8}$ in body without caudal.

Length 40 mm.

(Norman.)

South Atlantic.

Bathophilus schizochirus Regan
and Trewavas

Bathophilus schizochirus Regan
and Trewavas, Danish Dana Exped.
Oceanogr. Rep., No. 6, March 10, 1930,
p. 67, pl. 4, fig. 2. N. $25^{\circ}50'$ W. $76^{\circ}55'$,
1000 meters, Bahamas; N. $23^{\circ}36'$ W.
 $51^{\circ}17'$, 65 meters.

Depth $7\frac{1}{2}$; head 5. Snout $3\frac{1}{4}$ in
head; eye 10, 3 in snout; maxillary
extends $4\frac{3}{4}$ eye diameters behind
eye, length $1\frac{1}{8}$ in head; interorbital
moderately low.

Postocular luminous organ equals
 $1\frac{1}{5}$ eye diameters, well separated
from eye. Lateral series of photophores
13 or 14 between gill opening and ventral,
8 or 9 between ventral and anal;
ventral series 5 between isthmus and
pectoral, 14 between pectoral and ventral,
11 between ventral and anal, last 3 or
4 close together, 5 between anal and

caudal.

D. 14, fin height $2\frac{1}{4}$ in head;
A. 15, fin height $2\frac{1}{10}$; caudal $2\frac{2}{3}$,
forked, lower lobe longer; least
depth of caudal peduncle $6\frac{3}{4}$;
pectoral $1\frac{2}{5}$, rays 3 + 4; ventral
rays 19 or 20, length $4\frac{1}{2}$ in body
without caudal, origin little nearer
caudal base than snout end.

Length 72 mm. to caudal base.

(Regan and Trewavas.)

Caribbean Sea.

Bathophilus digitatus (Welsh)

Dactylostomias digitatus Welsh, Proc.
U.S. Nat. Mus., vol. 62, art. 3, 1923, p. 9,
fig. 9. Station 10171, 255 miles west from
Bermuda, 75 ~~to 100~~ meters.

Bathophilus digitatus Parr, Bull.

Bingham Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, p. 90 (copied). — Regan and
Trewavas, Danish Dana Exped. Oceanogr.
Rep., no. 6, March 10, 1930, p. 67, fig. 45
(copied).

Depth $7\frac{7}{8}$; head $3\frac{2}{3}$, width $2\frac{1}{5}$.
Snout $2\frac{1}{3}$ in head; eye $5\frac{1}{4}$, $2\frac{1}{2}$ in
snout, $1\frac{1}{4}$ in interorbital; maxillary
reaches 2 eye diameters behind eye,

length $1\frac{1}{4}$ in head from snout tip;
first pair of upper teeth placed
high and protrude through skin of
snout, second pair longest or $\frac{3}{4}$ of
eye, 7 smaller pairs of canines
followed by 16 small recumbent
teeth; first pair of lower teeth small,
erected and divergent, second pair
longest and followed by 8 smaller
pairs of canines; 4 or 5 teeth on each
palatine; tongue with 2 groups of
recurved teeth; barbel long, at least
reaches anal, simple, filamentous;
interorbital ³, moderately low, convex.
No gill rakers; gill filaments short.

Large oval luminous organ below and behind eye and smaller one in front on upper maxillary edge. Two rows of elongated photophores on each side of body ventrally, 15 in upper row from pectoral to ventral.

D. 14, fin height $1\frac{2}{5}$ in head; A. 15, fin height $1\frac{1}{2}$; caudal $1\frac{2}{5}$, forked; least depth of caudal peduncle $1\frac{1}{4}$ in eye; pectoral 1 in head, rays filamentous, in 2 groups with 3 in first and 4 in second; ventral 3 in combined head and body to caudal base, rays hair like.

Head and body metallic bronze,

thickly sprinkled with minute white glandular bodies with blackish edges. Fins white, except swollen black bases of posterior pectoral rays.

Western Atlantic.

84291 U.S.N.M. 225 miles west of Bermuda. Grampus (Bache) Station 10171. In 75 meters. February 2, 1914. Length 35 mm. Type of Dactyloctenias digitatus.

Bathophilus metallicus (Welsh)

Trichostomias metallicus Welsh, Proc.
U. S. Nat. Mus., vol. 62, art. 3, 1923, p. 11,
fig. 10. Station 10161, 115 miles east from Cape
Hatteras; 10166, 240 miles southeast from Cape
Hatteras; 10169, 270 miles southeast from Cape
Hatteras; 10173, 185 miles west from Bermuda;
10184, 210 miles south-southwest from Bermuda;
50 to 1000 meters.

Bathophilus metallicus Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,
p. 87, fig. 50 (type). — Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 67, pl. 4, fig. 1 (off southern
Spain, Canaries, Cape Verde Islands,

Bermuda, mid Atlantic, Azores,
 east and south east of Bermuda,
 off Lesser Antilles, ^{Morocco,} Madeira, Bahamas;
 10 to 7000 meters).

Bathophilus simplex Parr, Bull. Bingham
 Oceanogr. Collection, vol. 3, art. 2, Dec. 30,
 1927, p. 87, fig. 9. N. $32^{\circ}24'$ W. $64^{\circ}29'$,
 5000 feet.

Depth $7\frac{1}{4}$ to 8; head $4\frac{3}{4}$ to 5, width
 $2\frac{1}{8}$ to 3. Snout $2\frac{3}{4}$ to $3\frac{1}{4}$ in head; eye
 10 to $14\frac{3}{5}$, $2\frac{4}{5}$ to 3 in snout, 2 to $3\frac{1}{2}$
 in interorbital; maxillary extends 3
 to $3\frac{2}{3}$ eye diameters behind eye, length
 $1\frac{1}{8}$ to $1\frac{1}{6}$ in head; upper larger teeth

project when mouth closes, second pair longest, then third pair below middle of eye; 3 anterior pairs of mandibular teeth longest; each palatine with 2 small teeth; tongue with 2 groups of strong retrorse teeth; barbel very long, filamentous, at least reaches beyond end of caudal, inserted on mandible opposite eye; interorbital $3\frac{1}{4}$ to $3\frac{2}{5}$, convex. No gill rakers; gill filaments long as eye.

Small ovoid luminous organ close to maxillary behind vertical from hind eye edge, contiguous with

which oblong organ on upper maxillary edge; row of indistinct glandular organs on sides of snout and cheeks. Two rows of small elongate photophores on sides ventrally, 30 in each from gill opening to anal; single row of somewhat larger photophores above anal extend to end of caudal peduncle.

D. 13 to 15, fin height $1\frac{2}{3}$ to $1\frac{3}{4}$ in head; A. 13 to 16, fin height $1\frac{3}{5}$ to $1\frac{3}{4}$; caudal $1\frac{1}{2}$ to 2, forked; least depth of caudal peduncle equals eye; pectoral $3\frac{2}{5}$ to $4\frac{1}{2}$ in combined head and body to caudal base, first 2 rays slender, united basally and

filamentous, third ray stouter and
bristle like; ventral $2\frac{2}{5}$ to $3\frac{1}{8}$,
hair like and separated entirely.

Head and body dark greenish
bronze, with bright metallic reflections,
thickly strewn with minute white dots
bordered with black pigment. Top
of head, edge of opercular flap and
photophores black. Iris neutral gray.
Barbel white, sprinkled with minute
black chromatophores. Fins whitish.

Atlantic.

84294 U.S.N.M. 240 miles south east
from Cape Hatteras. Grampus (Bache)
Station 10169. In meters. Length 40
mm. Type of Trichostomias metallicus.

84295 U.S.N.M.
Grampus (Bache) Station 10169c. In 50
meters. February 1, 1914. Length 32 to 42
mm. 3 examples.

84296 U.S.N.M. 210 miles south-south-
west from Bermuda. Grampus (Bache)
Station 10184. In 100 meters. February 20,
1914. Length 40 mm.

84297 U.S.N.M. 115 miles east from Cape
Hatteras. Grampus (Bache) Station 10161.
In 1000 meters. January 28, 1914. Length 41 mm.

84298 U.S.N.M. 185 miles west from
Bermuda. Grampus (Bache) Station 10173.
February 4, 1914. In 100 meters. Length 39 to 45
mm. 12 examples.

84299 U.S.N.M. 240 miles south east
from Cape Hatteras. Grampus (Bache)
Station 10166. In 100 meters. January 30, 1914.
Length 38 mm.

Bathophilus vaillanti (Zugmayer)

Trichostomias vaillanti Zugmayer,

Bull. Inst. Océanogr. Monaco, no. 193, Jan.

20, 1911, p. 6. N. $37^{\circ}37'$ W. $10^{\circ}53'$, 4900 meters,

off Portugal; Rés. Camp. Sci Monaco, vol. 35,

1911, p. 78, pl. 3, fig. 4 (type).

Bathophilus vaillanti Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,

p. 88 (copied).

Bathophilus metallicus (not Welsh)

Regan and Trewavas, Danish Dana Exped.

Oceanogr. Rep., no. 6, March 10, 1930, p. 67

(part).

Depth $7 \frac{9}{10}$; head $4 \frac{7}{8}$. Snout $2 \frac{7}{8}$ in head; eye 10, $3 \frac{1}{2}$ in snout; maxillary extends 3 eye diameters behind eye, length $1 \frac{1}{3}$ in head; interorbital moderately low.

Postocular luminous organ narrow, long as $1 \frac{1}{4}$ eye diameters. Apparently 9 photophores in ventral series between pectoral and ventral, then 6 follow behind ventral not quite $\frac{1}{3}$ of space to anal.

D. 11, fin height $1 \frac{2}{3}$ in head; A. 12, fin height $1 \frac{2}{3}$; caudal $1 \frac{4}{5}$, lower lobe longer; least depth of caudal peduncle 8; pectoral rays $2 + 1$, length $3 \frac{1}{2}$ in body without caudal; ventral $3 \frac{3}{5}$, rays 5, origin little nearer snout tip than caudal base.

Black. Fins transparent white. Length 72 mm. without caudal. (Zugmayer). Eastern Atlantic.

Bathophilus longipinnis (Pappenheim)
Melanostomias longipinnis Pappenheim,
 Deutsche Sudpolar Exped., vol. 15, pt. 2,
 1914, p. 170, text fig. 1. N. $24^{\circ}41'$ W. $32^{\circ}21'$,
 20 meters, south west of Canaries.

Bathophilus longipinnis Parr, Bull.
 Bingham Oceanogr. Collection, vol. 3, art. 2,
 Dec. 30, 1927, p. 91 (copied). — Regan and
Trewavas, Danish Dana Exped. Oceanogr.
 Rep., No. 6, March 10, 1930, p. 68 (N. $22^{\circ}31'$ W. 62°
 $7'$; N. $24^{\circ}44'$ W. $51^{\circ}25'$; N. $29^{\circ}54'$ W. $35^{\circ}28'$; N.
 $29^{\circ}24'$ W. $48^{\circ}8'$; Florida Strait, ^{N.} $24^{\circ}30'$ W. 80° ;
 near St. Croix N. $17^{\circ}45'$ W. $64^{\circ}55.5'$; 65 to 1000
 meters). — Horman, Discovery Rep., vol. 2, 1930,
 p. 312 (S. $32^{\circ}45'$ W. $8^{\circ}47'$, 650 meters).

Gnathostomias longifilis Pappenheim,
 Deutsche Südpolar Exped., vol. 15, pt. 2,
 1914, p. 173. N. $24^{\circ}41'$ W. $32^{\circ}21'$, 20 meters,
 south west of Cape Verde Islands.

Bathophilus longifilis Parr, Bull. Bingham
 Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,
 p. 91 (copied).

Depth $6\frac{1}{2}$ to 8 (11); head 4 to 5
 ($5\frac{1}{2}$). Snout $2\frac{1}{5}$ to $2\frac{2}{5}$ in head;
 eye 6 to 12; interorbital 2 to 3.

Postocular organ little larger
 than eye, with small white spot
 well anterior or under eye. Lateral
 photophores 13 to 16 between gill
 opening and ventral, 10 to 12
 between ventral and anal.

D. 14 to 16; A. 15 or 16; pectoral
 rays 6 to 8, first three rays strongest;
 ventral rays 11 to 14, nearer caudal
 base than snout end.

Length 110 mm. to caudal base.

(Regan and Trewavas.)

Atlantic, Caribbean Sea.

Bathophilus ater (Brauer)

Dactylostomias ater Brauer, Zool.

Anzeiger, vol. 25, no. 668, 1902, p. 286.

near west coast South Africa, in 1000 meters;

~~near Chagos Archipelago~~; Deutsch. Tiefsee

Exped. Valdivia, vol. 15, Tiefsee-Fische,

1906, p. 57, pl. 3, fig. 3 (S. Lat. $26^{\circ}49'2''$ E.

Long. $5^{\circ}54'$ in 1000 meters).

Bathophilus ater Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, Dec. 30,

1927, p. 90 (compiled). — Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 68, fig. 46 (Type).

Dactylostomias ater

Depth 8; head $5\frac{1}{4}$. Snout 3 in head; eye $10\frac{2}{5}$, 4 in snout; maxillary extends 3 eye diameters behind eye, length $1\frac{1}{4}$ in head; interorbital low.

Postocular luminous organ with luminous spot in front and oblong patch below. Lateral photophores 16 between gill opening and ventral fin; ventral series 18 between pectoral and ventral; 13 to 15 between ventral and anal.

~~Dorsal rays~~ 17, fin height $2\frac{1}{10}$ in head; A. 17, fin height $2\frac{1}{6}$; caudal $1\frac{7}{8}$, well forked, lower lobe longer; least depth of caudal peduncle 6; pectoral rays 5, first 2 longer and stronger and little separated, $3\frac{1}{3}$ in body without caudal; ventral length $2\frac{1}{3}$, rays 9, origin little postmedian.

Bronze colored. Pupil greenish.
Barbel whitish. Fins pale. Length
83 mm. to caudal base. (Brauer.)

Atlantic off South Africa.

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Bathophilus indicus (Brauer)

Dactylostomias ater indicus Brauer,
Zool. Anzeiger, vol. 26, no. 668, 1902, p.
287. Near Chagos Islands.

Dactylostomias indicus Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15,
Tiefsee - Fische, 1906, p. 58 (S. Lat. $4^{\circ}5'8''$
E. Long. $73^{\circ}24'8''$, in 2260 meters; S. Lat.
 $6^{\circ}19'3''$ E. Lat. $73^{\circ}18'9''$, in 1900 meters).

Bathophilus indicus Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, December
30, 1927, p. 91 (compiled). — Regan and
Trewavas, Danish Dana Exped. Oceanogr.
Rep., no. 6, March 10, 1930, p. 68 (compiled).

Depth $7\frac{1}{2}$; head $4\frac{1}{2}$. Snout
 $4\frac{1}{5}$ in head; eye $12\frac{1}{2}$; ^{pre}maxillary
with 3 large anterior fangs, then 2
groups each with 3 teeth;
maxillary with 20 very small teeth;
2 large front lower teeth, then
2 moderately large and 2 subequal
and 7 small; vomer toothless;
pair of teeth on palatines; 2 pairs
on tongue.

Photophores 15 between pectoral
and ventral fins.

D. 13; A. 16; pectoral rays 4;
ventral rays 16. Length $37\frac{1}{2}$ mm.
to caudal base. (Brauer.)

Indian Ocean. The type cut
into sections by Brauer.

Bathophilus pawnee Parr

Bathophilus pawnee Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30,

1927, p. 88, fig. 51. N. $25^{\circ}56'$ W. $77^{\circ}37'$; N. 24°

W. $77^{\circ}17'$; N. $24^{\circ}29'$ W. $77^{\circ}29'$, 5000 to 8000

feet. — Regan and Trewavas, Danish Dana

Exped. Oceanogr. Rep., no. 6, March 10, 1930, p.

69, fig. 47 (east of Virgin Islands, mid

Atlantic, east of Barbados, north east of

Lesser Antilles, west of St. Lucia, off Dominica,

off Saint Croix, Lesser Antilles, south

east of Bermuda; 100 to 3000 meters). —

Horman, Discovery Rep., vol. 2, 1930, p.

312 (S. $00^{\circ}36'$ E. $8^{\circ}28'$, 100 to 200 meters;

S. $3^{\circ}6'30''$ W. $3^{\circ}53'$, 125 meters).

Depth $6\frac{1}{2}$ to $9\frac{1}{2}$; head 5 to $6\frac{2}{3}$. Snout $3\frac{1}{2}$ in head; eye $7\frac{1}{3}$, 2 in snout; maxillary extends $3\frac{1}{4}$ eye diameters behind eye, length $1\frac{1}{6}$ in head; interorbital rather low.

Postocular luminous organ small, with small luminous patch in front or below its front end. Ventral series of photophores 12 between pectoral and ventral, 14 between ventral and anal, 6 between anal and caudal. Usually small luminous spot behind ventral fin, sometimes 1 on shoulder.

D. 14 to 17, fin height 2 in head; A. 15 to 18, fin height 2; caudal $1\frac{4}{5}$, forked, lower lobe longer; least depth of caudal peduncle $7\frac{1}{3}$; pectoral rays 2, length $3\frac{3}{4}$ in body without caudal; ventral $2\frac{3}{4}$, rays 11 to 13, origin little nearer snout end than caudal base.

Length 116 mm. without caudal.

(Regan and Trewavas.)

Atlantic, Caribbean Sea.

Bathophilus melas Regan and Trewavas
Bathophilus melas Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 69, pl. 5, fig. 2. Bahamas
 N. $25^{\circ}50'$ W. $76^{\circ}55'$, 600 meters.

Depth $7\frac{3}{4}$; head $4\frac{7}{8}$. Snout
 $3\frac{1}{2}$ in head; eye 9, $2\frac{3}{4}$ in snout;
 maxillary extends 4 eye diameters
 behind eye, length $1\frac{1}{8}$ in head;
 interorbital moderately low.

Postocular luminous organ
 equals $1\frac{1}{2}$ eye diameters, with oblique
 white spot in front of and below its
 anterior end.

D. 14, fin height $1\frac{3}{5}$ in head; A.
 14 or 15, fin height $1\frac{3}{5}$; caudal $1\frac{3}{5}$,
 forked, lower lobe much longer; least
 depth of caudal peduncle $6\frac{1}{5}$; pectoral
 rays 2, $3\frac{1}{2}$ in body without caudal;
 ventral $3\frac{2}{5}$, rays 9 or 10, origin little
 nearer caudal base than snout tip.

1091

Deep black. Length 20 mm. to
caudal base. (Regan and Trewavas.)

Bahamas.

Bathophilus chironema Regan and Trewavas

Bathophilus chironema Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 69, pl. 5, fig. 3. N. $23^{\circ}40'W$.

$43^{\circ}26'$; N. $29^{\circ}43'W$. $37^{\circ}28'$; Florida Strait

N. $25^{\circ}37'W$. $79^{\circ}33'$; N. $28^{\circ}2'W$. $62^{\circ}26'$; west

of Bermudas N. $33^{\circ}15'W$. $68^{\circ}20'$; 150 to 300

meters.

Depth 7 to 9; head 5 to $5\frac{2}{3}$. Snout $3\frac{1}{5}$ in head; eye $9\frac{3}{4}$, $2\frac{4}{5}$ in snout; maxillary extends 5 eye diameters behind eye, length $1\frac{1}{8}$ in head; interorbital rather low.

Postocular luminous organ with round white spot before and below eye. Generally small luminous spot behind ventral fin. Lateral photophores 14 or 15 between gill openings and ventral fin, 12 or 13 between anal and caudal; ventral series 5 between isthmus and pectoral fin, 15 between

pectoral and ventral, 12 or 13
between ventral and anal, 5 to 7
between anal and caudal.

D. 14 to 16, fin height $2\frac{1}{5}$ in head;
A. 15 or 16, fin height $1\frac{7}{8}$; caudal
 $1\frac{3}{4}$, forked; least depth of caudal
peduncle 8; pectoral rays 2, fin $3\frac{1}{2}$
in body without caudal; ventral $3\frac{1}{2}$,
rays 6 to 8.

Length 53 mm. (Regan and Trewavas.)

Atlantic Ocean.

Bathophilus filifer (Garman)

Dactylostomias filifer Garman, Mem.

Mus. Comp. Zool., vol. 24, 1899, p. 279, pl.

56, fig. 6. N. $2^{\circ}34'W$. $92^{\circ}6'$; N. $10^{\circ}14'W$. 96°

$28'$; N. $16^{\circ}33'W$. $99^{\circ}52'30''$; 660 to 2232

fathoms.

Bathophilus filifer Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,

p. 86 (compiled). — Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep.,

no. 6, March 10, 1930, p. 69, fig. 48 (Gulf of

Panama N. $7^{\circ}30'W$. $79^{\circ}19'$; N. $6^{\circ}49'W$. $80^{\circ}25'$; N. 6°

$40'W$. $80^{\circ}47'$; N. $6^{\circ}48'W$. $80^{\circ}33'$; N. $7^{\circ}15'W$. $78^{\circ}54'$;

500 to 4500 meters). — Parr, Bull. Bingham

Oceanogr. Collection, vol. 2, art. 4, Oct. 1931,

1095-

p. 18 (N. $16^{\circ}14'$ W. $99^{\circ}36'30''$, 625 fathoms).

Depth 9 to 12; head 5 to $6\frac{1}{2}$. Snout 4 in head; eye $6\frac{1}{2}$, $1\frac{2}{3}$ in snout; maxillary extends 3 eye diameters behind eye, length $1\frac{1}{5}$ in head; 6 to 8 slender sharp teeth on each premaxillary, first fixed, second largest, others depressible and passing outside lower jaw; first and third lower teeth fixed, on outer aspect of bone, passing outside upper jaw, second tooth largest and fourth to eighth depressible; small immovable teeth on maxillary; short series of small teeth on each palatine; pair of strong hooked teeth on forward part of tongue; barbel very slender, twice long as head, with small bulb at end; interorbital moderately low.

Postocular luminous organ with luminous spot below.

D. 13 to 16, fin height $2\frac{7}{8}$ in head; A. 14 to 17, fin height $3\frac{1}{8}$; caudal small; least depth of caudal peduncle 8; pectoral single ray 5 in body without caudal; ventrals $1\frac{1}{10}$

in head, rays 4 or 5, nearly median in body and very close to ventral profile of body.

Intense black. Mouth and stomach black. Fins lighter than body. Small white dots scattered over flanks and below. Length 81 mm. without caudal. (Garman, Regan and Trewavas.)

Pacific off Central America and Galapagos.

1097

Genus Pachystomias Günther

Pachystomias Günther, Rep. Voy.

Challenger, vol. 22, 1887, p. 210. Type

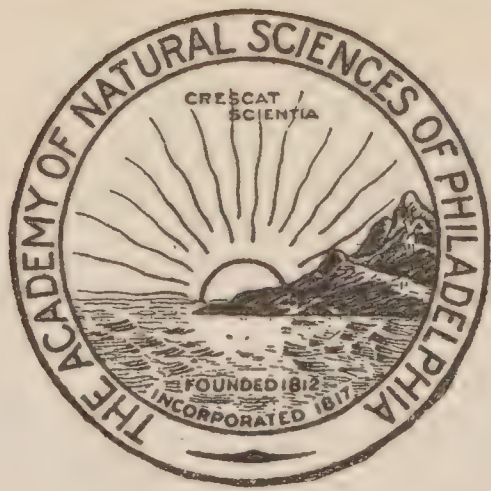
Echiostoma microdon Günther,

monotypic.

eye large.

Jaws rather slender, mouth cleft slightly curved. Teeth in jaws uniserial, slender, curved, acute, unequal, none very large; maxillary with small oblique teeth; teeth on palatines and pharyngeals; teeth on gill arches. Fold of skin connecting branches of lower jaw behind symphysis. Below eye large mass of luminous tissue, forming cushion on each side of roof of palate, appearing externally as long white patch with smaller

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LOGAN SQUARE
PHILADELPHIA, PA.

luminous patch above anterior end;
 postocular luminous organ small,
 behind posterior end of lower
 subocular patch. Dorsal rays 21
 to 24. Anal rays 25 to 27, origin
 below dorsal origin, ending little
 farther back than dorsal. Pectoral
 rays 5 or 6. Ventral rays 7, little
 postmedian.

Analysis of species

a.¹ Teeth short; close set series of 5
 teeth on each palatine, last longest.

microdon.

a.² Teeth longer; 2 teeth on each palatine,
 posterior longer.

atlanticus.

Pachystomias microdon (Günther)

Echiostoma microdon Günther, Ann.

Mag. Nat. Hist., series 5, vol. 2, August
1878, p. 180. Off north west coast of
Australia, in 2440 fathoms. — Macleay,
Proc. Linn. Soc. New South Wales, vol. 6, 1881,
p. 227 (copied).

Pachystomias microdon Günther, Rep.

Voy. Challenger, vol. 22, 1887, p. 210, pl. 53, fig.
C (type). — Goode and Bean, Oceanic
Ichth., 1895, p. 111 (reference). — Farr,
Bull. Bingham Oceanogr. Collection, vol.
3, art. 2, December 30, 1927, p. 104 (compiled).
— Regan and Trewavas, Danish Dana Exped.
(type).
Oceanogr. Rep., no. 6, March 10, 1930, p. 70 ^

Depth 5; head $4\frac{2}{3}$. Snout little less than eye; eye 4 in head; ~~snout~~ ~~slender, tapering, $\frac{1}{4}$ length of head~~ close set series of 5 backwardly directed teeth, last longest, on each palatine; similar series on first basibranchial, double series on second. barbel slender, tapering, $\frac{1}{4}$ length of head; interorbital 6.5

Lateral series of photophores 17 ($2 + 4 + 4 + 7$) between gill opening and ventral with first 2 ascending obliquely from isthmus, 14 ($10 + 4$) between ventral and anal ending above vent. Ventral series 17 between pectoral and ventral, 15 between ventral and anal with last 5 in close set series above vent, 9 between anal and caudal.

D. 24; A. 27.

Length 215 mm. without caudal.

(Regan and Trewavas.)

Australia.

Pachystomias atlanticus Regan and Trewavas

Pachystomias atlanticus Regan and Trewavas,

Danish ^{Exped.} Dana, Oceanogr. Rep., no. 6, March

10, 1930, p. 70, pl. 6, fig. 1. Caribbean Sea

west of St. Lucia. (N. $13^{\circ}47'$ W. $61^{\circ}26'$, 3500 meters)

Depth 5; head $4\frac{1}{2}$. Snout 4 in head from snout tip; eye 4, equals snout; maxillary $1\frac{1}{3}$ eye diameters behind eye, length $1\frac{1}{8}$ in head from snout tip; teeth rather long; 2 teeth on each palatine, posterior longer; 2 pairs of teeth on first basibranchial, 4 pairs on second; barbel $\frac{2}{3}$ of total head length, slender, tapering; interorbital 5 in head.

Lateral photophores 18 ($2+4+4+8$) between gill opening and ventral with first 2 ascending obliquely from isthmus, 13 ($9+4$) between ventral and anal ending above vent. Ventral series 16 ($4+12$) between pectoral and ventral, 15 ($10+5$) between ventral and anal ending about vent, 9 between anal and

caudal.

D. 21, fin height $2\frac{2}{5}$ in total head length; A. 25, fin height $2\frac{3}{4}$; caudal 13; least depth of caudal peduncle 10; pectoral $3\frac{4}{5}$; ventral $1\frac{1}{4}$.

Length 165 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea, west of St. Lucia.

Genus Eustomias Vaillant

Eustomias Vaillant, Exped. Sci.

Travailleur et Talisman, Paris.,

1888, p. 112. Type Eustomias obscurus

Vaillant, monotypic.

Neostomias Gilchrist, Marine Invest.

South Africa, vol. 4, 1908, p. 168. Type

Neostomias filiferum Gilchrist,

monotypic.

Spilostomias Regan and Trewavas, Danish

Dana Exped. Oceanogr. Rep., no. 6, March

10, 1930, p. 72. Type Eustomias braueri

Zugmayer, orthotypic.

Urostomias Regan and Trewavas, op.

cit., no. 6, March 10, 1930, p. 72. Type

Eustomias macrurus Regan and

Trewavas, orthotypic.

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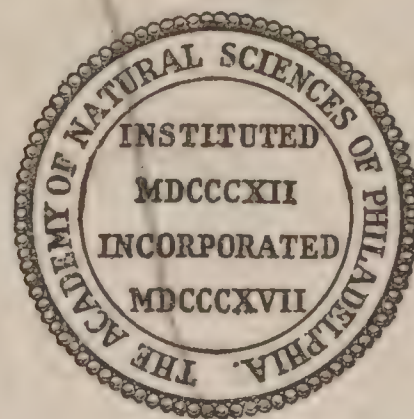
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Haploconus Regan and Trewavas,
op. cit., no. 6, March 10, 1930, p. 72. Type
Eustomias enbarbatus Welsh, orthotypic.

Homino stomias Regan and Trewavas,
op. cit., no. 6, March 10, 1930, p. 72. Type
Eustomias bibulbosus Parr, orthotypic.

Rhyncho stomias Regan and Trewavas,
op. cit., no. 6, March 10, 1930, p. 72. Type
Eustomias parvi Regan and Trewavas,
orthotypic.

Achio stomias Regan and Trewavas,
op. cit., no. 6, March 10, 1930, p. 72. Type
Eustomias lipochirus Regan and Trewavas,
orthotypic.

Triclonostomias Regan and Trewavas,
op. cit., no. 6, March 10, 1930, p. 73. Type
Eustomias brechseli Regan and Trewavas,
orthotypic.

Cinematochirus Regan and Trewavas,
op. cit., no. 6, March 10, 1930, p. 73. Type
Leostomias fissibarbis Pappenheim, orthotypic.

Body elongate. Mouth cleft straight.
Upper jaw protractile. Teeth in jaws
slender, acute, not barbed, unequal,
uniserial or irregularly biserial;
first 2 upper teeth usually more or
less enlarged fangs, fixed or
depressible; behind front fangs in
each jaw row of teeth, generally divided

variable fixed and depressible,
usual depressible forming inner
series, often divided into groups
with teeth longer posteriorly with
smaller outer fixed teeth in gaps
between groups; maxillary with
row of small oblique teeth; first
lower tooth small, fixed, second
fixed or depressible fang opposite
interspace between first and
second upper. Palate toothless;
3 pairs of teeth on basibranchials,
none on gill arches. Dorsal rays

20 to 30. Anal rays 32 to 46, extend forward in advance of dorsal. Pectoral rays 0 to 13. Ventral rays 7 or 8, origin median or postmedian.

The largest genus, ^{of the family,} with many species, and divided into many subgenera by Regan and Trewavas.

Eustomias radicifilis Borodin
Eustomias radicifilis Borodin, Proc.
 New England Zool. Club, vol. 11, Jan. 10,
 1930, p. 89. N. 33° W. 64°, 1200 mm.

This species is ^{described} without reference
to any of the known forms.

Hettastomops barbatula Steindachner

Hettastomops barbatula Steindachner,

Anzeiger Akad. Wiss. Wien, Nr. , 1906,

p. 299.

Analysis of species

a. Barbel stem unbranched or with simple tapering branch just basal to bulb or pair of filaments at base of bulb.

b. Spilostomias. Upper jaw teeth fixed; lower teeth fixed except fourth and sixth which depressible; pectoral rays 10 to 13; ventral 8.

c. Pair of minute filaments or none, immediately basal to bulb of barbel.

c.² Pair of long filaments basal to bulb of barbel. braueri.
stigmatopleura.

b.² Teeth few, mostly fixed, fourth upper movable or depressible, third and fifth lower and sometimes sixth depressible; pectoral rays 3 to 9; ventral 7.

d. Urostomias. Pectoral rays 9; barbel unbranched. macrurus.

11/10

d.² Haploclonus. Pectoral rays 3 or 4;
barbel with simple tapering
branch basal to bulb.

e.¹ Bulb without appendage bearing
several stalked small oval or
club shaped bodies.

f.¹ Median terminal filament
about long as bulb. brevifilis.

f.² Median terminal filament
at least twice long as bulb.

g.¹ Bulb with 5 terminal
appendages. en barbata.

g.² Bulb with 3 terminal
appendages. regani.

e.² Bulb with appendage resembling
bunch of grapes, having numerous
stalked small oval or club
shaped bodies on a stem.

h.¹ Median terminal appendage¹¹¹¹
short, swollen at end.

h.² Median terminal appendage^{acinosus.}
 $\frac{1}{10}$ length of barbel,
branched. ^{burbura.}

h.³ Median terminal appendage
 $\frac{1}{5}$ length of barbel,
branched. ^{botrypogon.}

b.³ Anterior fangs (first tooth above
and second below) fixed; second in
upper jaw fixed or depressible;
posteriorly in both jaws series of
depressible teeth and few smaller
outer fixed teeth.

i.¹ Pectoral rays 2 or 3;
ventral 7; barbel unbranched.

j.¹ Eustomias. Second
premaxillary fang not
longer than first, separated
by rather wide gap; pectoral
rays 3; lateral photophores

1112

partly in pairs. obscurus.
f.² hominostomias. Second
premaxillary fang generally
longer than first, separated
by relatively narrow
interspace; photophores
evenly spaces.

h. Pectoral rays 3.

l. Barbel with 2 bulbs.

m. Barbel with long
tapering terminal appendage,
generally unbranched
except basally.

n. Terminal appendage
without filamentous
branches. bibulbosus.

n.² Terminal appendage
with 1 to 3 simple filaments
near base. bituberatus.

1113

n.³ Terminal appendage
with 4 to 8 filaments
near base, which
beaded or with terminal
swellings. micraster.

m.² Barbel with branched
terminal appendage.

o.¹ Terminal appendage
at least half of head,
with 2 to 4 main branches
in terminal half.

o.² Terminal appendage
less than $\frac{1}{3}$ of head,
richly branched. bimargaritatus.
arborifer.

m.³ Barbel with 5 to 8 pigmented
filaments at end of terminal
bulb.

p.¹ Terminal bulb rounded
or ovate, with basal
pigment spot; filaments
on a stalk. melanostigma.

1114
f.² Terminal bulb
elongate, without
pigment spot; filaments
not stalked. melanonema.

m.⁴ Barbel with 1 bulb.

gf.¹ Bulb with branched terminal
appendage. patulus.

gf.² Bulb with simple terminal
appendage. longibarba.

gf.³ Bulb without appendage.
simplex.

h.² Pectoral rays 2.

r.¹ Barbel with bulb divided
by terminal notch into 2
unequal lobes, longer tapering.

s.¹ One bulb with 2 minute
filaments; barbel $\frac{2}{4}$ to $\frac{1}{3}$ of
body without caudal. dubius.

s.² Only 1 bulb bearing terminal
branched appendages; barbel
 $\frac{1}{2}$ of fish without caudal.
schiffi.

1115

z.³ Small bulb basal to main one, bears branched terminal appendage, with 2 to 4 bulb-like bodies on stem; barbel $\frac{1}{2}$ to $\frac{2}{3}$ body without caudal.

polyaster.

r.² Barbel with 2 to 4 separate bulbs, none bilobed.

t.¹ Two well separated bulbs, sometimes with 1 or 2 smaller ones between.

variabilis.

t.² Three bulbs, median very near terminal, which larger.

trituberculatus.

t.³ Three bulbs, median very near terminal, which smaller.

trawavasa.

t.⁴ Two bulbs, near together, terminal larger.

brevibarbat.

r.³ Barbel with 1 bulb, sometimes divided, but if so 2 parts contiguous.

u.¹ Bulb divided into basal slender and terminally broadly rounded part.

xenobolus.

u.² Barbel pear shaped, with terminal filament.

pyrifer.

u.³ Barbel small, oval, with broad blunt terminal appendage. globulifer.

u.⁴ Barbel elongate, with minute terminal filament; barbel long as fish.

macrophthalmus.

u.⁵ Barbel elongate, with small filament; barbel $\frac{1}{2}$ long as fish. leptobolus.

b.⁴ Teeth depressible, except few small fixed outer ones; barbel unbranched; ventral rays 7.

v.¹ Rhynchostronias. Pectoral rays 4 or 5. parri.

1117

v.² Achirostomias. No pectoral fins.

w.¹ Barbel axis unpigmented except terminal streak; corner of terminal edge of bulb produced. dactylobolus.

w.² Barbel axis pigmented nearly to bulb, which has slight corner. lipochirus.

w.³ Barbel axis pigmented to bulb, which contains black body. melanobolus.

a.² Barbel stem with at least 1 posterior branch, usually with 3, median originating from between 2 lateral; front fangs fixed or depressible, followed by series of depressible teeth and few small fixed teeth.

x.¹ Trichostomias. Pectoral rays 6 or 7; ventral 8; front fangs depressible; barbel with 3 branches.

y.¹ Branches long, slender, divided terminally. drechselei.

y.² Median branch divided terminally; lateral branches simple filaments. purcifer.

y.³ Median branch undivided, with ¹¹¹⁸ terminal bulb; lateral branches simple filaments. tenisoni.

x.² Sinematochirus. Pectoral rays 2, well developed; ventral 7; front fangs fixed either above or below, usually in both jaws.

z.¹ Barbel with 3 branches.

aa.¹ Lateral branches undivided.

bb.¹ Bulb small; lateral branches long. parvibullus.

bb.² Bulb large, with terminal filaments; lateral branches moderate.

bb.³ Bulb large, without filaments. bigelowi.

aa.² Lateral branches bifid or at least each with well developed secondary branch. triramis.

cc.¹ Stem terminal to origin of branches translucent, with pigmented axis.

- 1119
- dd.¹ Branches moderate. paucifilis.
dd.² Branches long, median more
than twice long as main stem
of barbel. silvaceus.
cc.² Stem pigmented throughout.
cc.¹ Median branch rather
large bulb on short stem.
cc.² Median branch slender,
well developed. schmidti.
cc.³ Median branch fine
filament. macronema.
frondosus.

z.² Barbel with 1 branch.

- ff.¹ Branch dividing into 4. binghami.
ff.² Branch ending in bulb
bearing 2 long bifid branches.
fissibarbis.
ff.³ Branch without bulb,
bearing several branches.
dendriticus.
ff.⁴ Branch slender, simple, ends in
small bulb. monoclonus.

1120

x.³ heostomias. Pectoral single well developed ray and sometimes minute second ray; ventral rays 7; front fangs depressible; barbel with 3 branches.

gg.¹ Branches similar, long, slender, 4 or 5 luminous swellings on stem beyond branches. tetranema.

gg.² Median branch¹ rather short, dissimilar in structure to lateral branches; 2 luminous swellings on stem beyond branches.

hh.¹ Lateral branches rather short, divided nearly to base.

hh.² Lateral branches long, undivided, bearing few filamentous branches. ramulosus.

hh.³ Lateral branches simple, tapering, with minute terminal swellings. monodactylus.
filifer.

Eustomias acinosus Regan and Trewavas

Eustomias acinosus Regan and Trewavas,
 Danish Dana^{Exped.} Oceanogr. Rep., no. 6, March

10, 1930, p. 79, fig. 55 (end of barbel). N.

$35^{\circ}31' W. 55^{\circ}58'$, 150 meters; N. $27^{\circ}2' W. 53^{\circ}$

$39'$, 700 meters.

Depth $9\frac{1}{2}$ to $10\frac{1}{2}$; head 7 to $7\frac{2}{3}$.
 Eye $5\frac{1}{2}$ to $6\frac{1}{2}$ in head; barbel little
 over $\frac{1}{4}$ length of fish, with small
 rounded bulb bearing towards
 terminal end appendage resembling
 bunch of grapes, numerous stalked
 ovate bodiles attached to stem; median
 terminal appendage of bulb short,
 swollen at end and slender filament
 near; barbel without pigment except
 spot at base of bulb; interorbital $5\frac{1}{2}$
 in head.

Lateral photophores 26 or 27 between
 gill opening and ventral, 11 to 13 between
 ventral and anal; ventral series 7
 between isthmus and pectoral, 26 or 27

between pectoral and ventral, 14
between ventral and anal, 19 to 23
between anal and caudal.

D. 21 or 22; A. 35 or 36; pectoral
rays 3; ventral inserted behind
middle of length, nearly or quite
reaching vent.

Length 114 mm. to caudal base.

(Regan and Trewavas.)

Atlantic.

Eustomias arborifer (Parr)

1123

Eustomias bibulbosus subspecies arborifer
Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, pp. 70, 72. N. 24°
W. 77°17', 6000 feet.

Eustomias arborifer Regan and Trevaas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 85 (compiled).

Depth 15; head $7\frac{1}{2}$. Eye 4 in head;
barbel white, $\frac{3}{4}$ long as fish, with
2 bulbs, terminal larger and interspace
equals length of terminal bulb,
terminal appendage less than $\frac{1}{3}$
head, richly branched, main
filament and branches beaded,
12 or 13 teeth in each premaxillary;

Lateral photophores 33 between
gill opening and ventral, 18 between
ventral and anal, last 8 behind

anal origin; ventral series with 8
between isthmus and pectoral, 33
between pectoral and ventral, 17
between ventral and anal, 19
between anal and caudal.

D. 25; A. 38; pectoral rays 3,
fin about $6\frac{1}{8}$ in body without caudal;
ventral $6\frac{3}{5}$, rays 7.

Length 105 mm. without caudal.

(Parr, Regan and Trewavas.)

Western Atlantic.

Eustomias barbuva Regan and Trewavas

Eustomias barbuva Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 79, pl. 7, fig. 3, text fig. 55b.

N. $33^{\circ}18'$ W. $56^{\circ}3'$, 150 meters.

Depth $10\frac{3}{4}$; head $7\frac{1}{5}$. Snout $3\frac{1}{4}$
 in head; eye $5\frac{1}{8}$, $1\frac{4}{5}$ in snout;
 maxillary extends $2\frac{1}{4}$ eye diameters
 behind eye, length $1\frac{1}{10}$ in head;
 barbel unpigmented, $3\frac{1}{3}$ in body
 without caudal, bulb ovate with bunch
 of grape like bodies, terminal appendage
 branched, with several swellings and
 4 times bulb; interorbital 5 in head.

Postocular luminous organ $\frac{3}{4}$ of
 eye. Lateral photophores 27 between
 gill opening and ventral, 13 between
 ventral and anal; ventral series 7
 between isthmus and pectoral, 27 between
 pectoral and ventral, 12 between ventral
 and anal, 19 between anal and caudal.

D. 24, fin height $4\frac{1}{2}$ in head;
A. 36, fin height $3\frac{2}{3}$; caudal $2\frac{1}{6}$;
least depth of caudal peduncle 7;
pectoral $1\frac{2}{5}$, rays 3 right and 4 left;
ventral $6\frac{3}{4}$ in body without caudal.

Length 109 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias bibulbosus Parr

Eustomias bibulbosus Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 70 (on subspecies bibulbosus). — Regan and Trewavas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 82, fig. 61 (end of barbel) (N. $27^{\circ}02'$ W. $53^{\circ}39'$, 1100 meters; N. $35^{\circ}42'$ W. $73^{\circ}43'$, 300 meters).

Eustomias bibulbosus subspecies bibulbosus Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, pp. 70, 71 (N. $23^{\circ}58'$ W. $77^{\circ}26'$, 7000 feet).

Depth 12 to 13; head 8. Eye nearly 5 in head; barbel long as fish, axis lightly pigmented, 2 subequal bulbs

1128

or terminal larger separated by space 2 or 3 times diameter of larger and tapering terminal appendage about twice long as head, without branches; interorbital 7 to 8 in head.

Lateral photophores 30 to 33 between gill opening and ventral; 18 or 19 between ventral and anal; ventral series 7 between isthmus and pectoral, 30 to 32 between pectoral and ventral, 18 between ventral and anal, 17 or 18 between anal and caudal.

D. 24 or 25; A. 38; pectoral rays 3.

Length 136 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias bigelowi WelshEustomias bigelowi Welsh, Proc. U.S.

Nat. Mus., vol. 62, art. 3, 1923, p. 6, figs.

5-6. 170 miles southeast from Cape Hatteras,

500 meters; 120 miles southeast from Cape

Hatteras, 150 meters. — Regan and Trevaas,

Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 98, fig. 85 (barbel) (Florida

Strait N. $24^{\circ}30'$ W. 80° ; 600 meters; N. $28^{\circ}15'$ W. 56° , 2000 meters).Eustomias bigelowi subspecies bigelowi Parr,

Bull. Bingham Oceanogr. Collection, vol. 3,

art. 2, Dec. 30, 1927, p. 78 (type).

1130

Depth $8\frac{2}{3}$; head 7, width 3. Snout
3 in head; eye 4, $1\frac{1}{8}$ in snout, greater
than interorbital; maxillary extends
^{eye diameters}
 $1\frac{3}{4}$ behind hind eye edge, length $1\frac{1}{8}$
in head; largest upper teeth first,
fourth, tenth and thirteenth; palate
toothless; tongue with 3 pairs of strong
recurved fangs; barbel short, stout,
5 in combined head and body to caudal
base, 3 filaments formed midway in
its length, subconic bulb at tip giving
3 long and 4 short filaments; interorbital
 $4\frac{1}{5}$ in head, rather high, convex. Gill
rakers not developed or as rudimentary
low ridge on each gill arch; gill

filaments $1\frac{3}{5}$ in eye.

Small triangular luminous body close above maxillary little below eye. Two rows of small, circular, nearly equidistant photophores along side of body ventrally extending to sixth anal ray; thence to caudal peduncle single intermediate row of somewhat larger photophores; upper row from gill opening to ventral 29, ventral to anal 10, along anal 4; lower or ventral row with 9 on isthmus to pectoral, 29 from pectoral to ventral, 10 from ventral to anal, 4 along anal; intermediate row along anal to caudal

peduncle 21.

D. 22, fin origin over middle of anal, fin height $2\frac{2}{5}$ in head; A. 41, fin height $3\frac{3}{4}$; caudal 2, forked; pectoral $1\frac{1}{2}$, rays 2, filamentous, closely joined for short space basally; ventral $1\frac{3}{5}$, rays 7, not divided; least depth of caudal peduncle $1\frac{1}{5}$ in eye.

Body and head velvet black, with minute white granulations, most numerous along lower row of photophores. Barbel black, conic tip and filaments white. Dorsal and anal whitish, rays pigmented dusky basally, last 10

banded with black at segments. Pectoral black. Ventral whitish, rays evenly pigmented with black.

Atlantic Ocean.

84284 U.S.N.M. 170 miles southeast

from Cape Hatteras. In 500 meters.
Grampus (Barbe) Station 10163 1/2.
January 29, 1914. Length 102 mm.
Type I.

Eustomias bimargaritatus Regan and Trewavas

Eustomias bimargaritatus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 84, fig. 63 (end of barbel).

N. $22^{\circ}31'$ W. $62^{\circ}07'$; N. $22^{\circ}12'$ W. 40° ; N. $22^{\circ}14'$ W. 67°

$22'$; N. $20^{\circ}50'$ W. $66^{\circ}30'$; north of Virgin Islands

N. $19^{\circ}01'$ W. $65^{\circ}23'$; N. $28^{\circ}2'$ W. $62^{\circ}26'$; 100 to 300

meters.

Depth 11 to 15; head 7 to 8. Eye $4\frac{2}{3}$ to 6 in head; barbel from less than $\frac{1}{2}$ to nearly $\frac{3}{4}$ length of fish, stem unpigmented, terminal of 2 bulbs larger and separated by space rarely greater than length of larger bulb; terminal appendage from $1\frac{1}{2}$ to little longer than head, generally dividing at half its length, sometimes further, into 3 filaments, rarely 2 or 4; which generally branched; interorbital $6\frac{1}{2}$ to $7\frac{1}{2}$ in head.

Lateral photophores 33 or 34
between gill opening and ventral,
17 to 19 between ventral and anal;
ventral series 7 between isthmus and
pectoral, 32 to 34 between pectoral
and ventral, 17 or 18 between ventral
and anal, 18 to 21 between anal and
caudal.

D. 24 to 26; A. 37 to 40.

Length 92 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias binghami Parr

Eustomias binghami Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,
p. 80, figs. 47-48. N. $22^{\circ}31'$ W. $74^{\circ}26'$; 10000 feet,

— Regan and Trewavas, Danish Dana Exped.
Oceanogr. Collection, no. 6, March 10, 1930, p. 103,
fig. 93 (end of barbel) (compiled).

Depth $8\frac{7}{8}$; head $6\frac{7}{8}$. Snout $2\frac{3}{5}$
in head; eye 4, $1\frac{3}{4}$ in snout;
maxillary extends eye diameter
behind eye, length $1\frac{1}{6}$ in head;
15 teeth in each premaxillary and 16 in
each limb of lower jaw; barbel $4\frac{1}{5}$ in
body without caudal, terminal club
shaped bulb $\frac{1}{3}$ of barbel, basal $\frac{3}{4}$ of
hind surface black like stem of barbel,
filament long as bulb arises from ^{center of} terminal
unpigmented area posteriorly also with
number of short branches basally, front
surface of bulb white with 5 minute
filaments terminally; little above

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middle of barbel branch arises with 3 long filaments each ending in small bulb, each filament -giving off near middle minute rod like luminous body on very short feeble stem; interorbital moderately low.

Postorbital luminous body nearly large as eye or 5 in head. Lateral photophores 25 between gill opening and ventral, 14 between ventral and anal of which last 4 above anal base; ventral series 7 between isthmus and pectoral, 25 between pectoral and ventral, 14 between ventral and anal, 22 between anal and caudal.

D. 25, fin height $3\frac{2}{5}$ in head; A. 46, fin height $2\frac{3}{4}$; caudal $2\frac{2}{5}$; least depth of caudal peduncle 7; pectoral $1\frac{2}{3}$, rays 2; ventral rays 8, fin $1\frac{1}{3}$ in head.

Length 99 mm. without caudal. (Parr.)

Western Atlantic.

Eustomias bituberatus Regan and Trewavas

Eustomias bituberatus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 83, pl. 8, fig. 1, text figs.

61 b-e (ends of barbels). N. $27^{\circ}31'$ W. $59^{\circ}52'$; N. $12^{\circ}11'$ W. $57^{\circ}12'$; Caribbean Sea near St. Croix N. $17^{\circ}43'$ W. $64^{\circ}56'$; Caribbean Sea near Martinique N. $14^{\circ}38'$ W. $61^{\circ}16'$; off French Guiana N. $5^{\circ}35'$ W. $51^{\circ}08'$; 300 to 700 meters.

Depth $1\frac{2}{3}$ to 3; head 7 to 9. Snout $2\frac{4}{5}$ in head from snout tip; eye 5 to 6, 2 in snout; maxillary extends $2\frac{1}{5}$ eye diameters behind eye, length $1\frac{1}{10}$ in head; barbel nearly long as to $1\frac{3}{4}$ times fish, axis highly pigmented, with terminal of 2 bulbs larger and separated by distance greater than diameter of either, tapering terminal appendage $\frac{7}{8}$ to $1\frac{2}{3}$ times head with

2 filamentous branches (rarely 1 or 3) near base; interorbital 7 or 8 in head, low.

Postocular luminous organ small. Lateral photophores 31 to 34 between gill opening and ventral, 18 or 19 between ventral and anal; ventral series 7 or 8 between isthmus and pectoral, 32 to 34 between pectoral and ventral, 18 or 19 between ventral and anal, 18 to 21 between anal and caudal.

D. 25 or 26, fin height 4 in total head; A. 36 to 40, fin height $3\frac{1}{8}$; caudal $1\frac{9}{10}$; least depth of caudal peduncle 8; pectoral $2\frac{1}{5}$, rays 3; ventral $6\frac{1}{6}$ in body without caudal, rays 6.

Length 133 mm. without caudal.
(Regan and Trewavas.)

Atlantic, Caribbean Sea.

Eustomias botryfugon Regan and Trewavas
Eustomias botryfugon Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 80, fig. 56 (end of barbel).
 Atlantic north of Cape Verde Islands N. $19^{\circ}22'$
 W. $24^{\circ}6'$, 500 meters.

Depth 10; head $7\frac{2}{3}$. Eye $5\frac{1}{3}$ in head;
 barbel more than $\frac{1}{2}$ fish, axis pigmented
 near small ovate bulb bearing "bunch of
 grapes" and other appendages, median
 terminal appendage long, appears as
 continuation of stem, terminally with several
 branches each with basal cigar shaped
 swelling and terminal filament ending
 in minute bulb; interorbital $6\frac{1}{2}$ in head.

Lateral photophores 27 between gill
 opening and ventral, 12 between ventral and
 anal; ventral series 7 between isthmus and
 pectoral, 27 between pectoral and ventral,
 12 between ventral and anal, 20 between
 anal and caudal.

1141
D. 23; A. 37; pectoral rays 3.
Length 185 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

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Eustomias braueri Zugmayer

Eustomias braueri Zugmayer, Bull.
Inst. Océanogr. Monaco, no. 193, Jan. 20,
1911, p. 5. N. $36^{\circ}14'$ W. 80° , 1400 meters, off
Portugal; Rés. Camp. Sci. Monaco, vol. 35,
1911, p. 72, pl. 3, fig. 3 (type). — Parr,
Bull. Bingham Oceanogr. Collection, vol. 3,
art. 2, Dec. 30, 1927, p. 76 (copied). —
Regan and Trewavas, Danish Dana Exped.
Oceanogr. Rep., no. 6, March 10, 1930, p.
77, fig. 51c (barbel) (two Monaco specimens).

Depth 13; head $6\frac{1}{2}$. Barbel nearly long
as head, bulb with leaf like appendage?,
pair of minute filaments at base of bulb.

Ventral photophores 29 between gill
opening and ventral, 16 between ventral
and anal, 20 between anal and caudal.

D. 22 to 27; A. 36 to 38; pectoral rays 10 to 12; ventral rays 8.

Small white spots above and below lateral photophores. Length 95 mm. without caudal.

(Regan and Trewavas.)

Eastern Atlantic.

Eustomias brevibarbatus Parr

Eustomias brevibarbatus Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 30, 1927, p. 68, figs. 40 (outline) 36a (end of barbel).
 N. 24° W. $77^{\circ}17'$, 6000 feet; N. $23^{\circ}55'$ W. $77^{\circ}9'$, 4000 to 7000 feet. — Regan, and Trevaas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 92, fig. 74 b-c (off French Guiana N. $5^{\circ}35'$ W. $51^{\circ}08'$; N. $10^{\circ}24'$ W. $54^{\circ}38'$; west of St. Lucia N. $13^{\circ}47'$ W. $61^{\circ}26'$; off Dominica N. $15^{\circ}8'$ W. $61^{\circ}31'$; off St. Croix N. $17^{\circ}43.7'$ W. $64^{\circ}57'$; N. $17^{\circ}58.5'$ W. $64^{\circ}41'$; N. $17^{\circ}58.5'$ W. $64^{\circ}41'$; N. $17^{\circ}43'$ W. $64^{\circ}56'$; between Florida and Cuba N. $23^{\circ}13'$ W. $82^{\circ}21'$; south of St. Croix N. $17^{\circ}13'$ W. $64^{\circ}58'$; N. $17^{\circ}43'$ W. $64^{\circ}56'$; west of Lesser Antilles N. $16^{\circ}3'$ W. $62^{\circ}29'$; 50 to 4000 meters).

Depth 10 to 12 $\frac{1}{2}$; head 7 to 8 $\frac{2}{3}$.
Eye 5 $\frac{1}{3}$ to 6 $\frac{2}{3}$ in head; barbel less
than $\frac{1}{4}$ to $\frac{1}{3}$ length of fish, with 2
rounded or oval bulbs, rarely
separated by space greater than

~~Lutjanus rangus (Cuvier)~~

mesoprion rangus Cuvier, Hist. Nat. Poiss.;
vol. 2, 1828, p. 482. Java. (On Rangoo
Russell, Fishes of Coromandel, vol. 1, 1803,
p. 74, pl. 94. Vijagapatam.) — Cantor,
Journ. Asiat. Soc. Bengal, vol. 18, pt. 2,
1849, p. 996 (Pinang, Singapore, Malay
Peninsula). — Günther, Cat. Fishes Brit.
Mus., vol. 1, 1859, p. 199 (Ceylon). — Day,
Fishes of Malabar, 1865, p. 10; Proc. Zool.
Soc. London, 1865, p. 10 (Cochin). — Kner,
Reise Novara, Fische, 1865, p. 34 (Ceylon;
Hong Kong). — Day, Proc. Zool. Soc. London,
1870, p. 680 (Sandamans). — Meyer, Anales
Soc. Españ. Hist. Nat. Madrid, vol. 14,
1885, p. 11 (North Celebes). — Boulenger,
Proc. Zool. Soc. London, 1887, p. 655 (Muscat).
— Duncker, Mitteil. Naturh. Mus. Hamburg,
vol. 21, 1903 (1904), p. 147 (compiled).

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length of terminal bulb which much larger and bearing small terminal appendage - of 2 to 4 filaments on short stalks; axis of stem pigmented between bulbs, basal part of terminal bulb blackish and white filaments with stalks sometimes pigmented; interorbital 6 or 7 in head.

Lateral photophores 32 to 35 between gill opening and ventral, 14 to 18 between ventral and anal; ventral series 7 or 8 between isthmus and pectoral, 32 to 34 between pectoral and ventral, 15 or 16 between ventral and anal, 15 to 18 between anal and caudal.

D. 23 to 26; A. 34 to 38; pectoral rays 2.

Length 148 mm. without caudal.
(Regan and Trewavas.)

Western Atlantic, Caribbean Sea!

Eustomias brevifilis Regan and Trewavas
Eustomias brevifilis Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 78, fig. 54 (end of barbel).
 N. $13^{\circ}35'W.$ $30^{\circ}11'$, 300 meters; N. $12^{\circ}11'W.$ 35°
 $49'$, 5000 meters.

Depth $10\frac{1}{2}$ to $11\frac{1}{2}$; head 8 to $8\frac{1}{3}$. Eye
 5 in head; barbel less than $\frac{2}{7}$ to $\frac{1}{3}$ of
 fish, without pigment except spot at
 base of bulb which small, oval and
 bearing 4 or 5 terminal filaments,
 longest branched, long as bulb, branch
 from stem comparatively short;
 interorbital $6\frac{1}{4}$ to $6\frac{1}{2}$ in head.

Lateral photophores 27 or 28 between
 gill opening and ventral, 12 between
 ventral and anal; ventral series 7
 between isthmus and pectoral, 26 or 27
 between pectoral and ventral, 11 or 12
 between ventral and anal, 19 or 20 between
 anal and caudal.

d. 22; A. 34 to 36.

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Length 105 mm. without caudal.
(Regan and Trewavas.)

Atlantic.

Eustomias dactylobolus Regan and Trewavas
Eustomias dactylobolus Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 94, pl. 8, fig. 4, text fig.
 c (end of barbel). Off Cape Verde Islands
 N. $15^{\circ}50'W.$ $26^{\circ}32'$, 300 meters; N. $12^{\circ}11'W.$ 35°
 $49'$, 300 meters.

Depth 12; head $7\frac{1}{2}$ to $8\frac{1}{2}$. Eye 6 in head; barbel little shorter than head, white stem with series of black dots along front edge and basally anterior blackish streak on axis; rather large bulb truncated, anterior corner of terminal edge produced as blunt appendage; interorbital $5\frac{2}{3}$ in head.

Lateral photophores 29 between gill opening and ventral, 14 between ventral and anal; ventral series 7 between isthmus and pectoral, 28 or 29 between pectoral and ventral, 13 between ventral and anal, 19 or 20 between anal and caudal.

1150
D. 24; A. 38 to 40; no pectoral rays.
Length 86 mm. to caudal base.

(Regan and Trewavas.)

Atlantic.

Eustomias dendriticus Regan and Trewavas

Eustomias dendriticus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 104, fig. 96 (end of barbel).

N. $29^{\circ}24'$ W. $48^{\circ}8'$, 110 meters.

Depth $11\frac{2}{3}$; head 8. Eye 6 in head; barbel nearly long as head, stem pigmented, oblong bulb slightly constricted, pigmented basal to constriction, bearing pair of bifid filaments; only 1 branch unpigmented, tapering branched; first 4 secondary branches come off at same level; interorbital $5\frac{1}{3}$ in head.

Lateral photophores 30 between gill opening and ventral, 16 between

ventral and anal; ventral series
7 between isthmus and pectoral, 30
between pectoral and ventral, 15
between ventral and anal, 22 between
anal and caudal.

D. 23; A. 38; pectoral rays 2;
ventral rays 7.

Length without caudal 64 mm.

(Regan and Trewavas.)

Atlantic.

Eustomias drechselei Regan and Trewavas
Eustomias drechselei Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 95, figs. 81 (end of barbel)
 82 a (dentition). N. $33^{\circ}42'$ W. $36^{\circ}16'$, 1000 meters.

Depth 12; head 8. Eye $6\frac{1}{2}$ in head;
 barbel to end of bulb $\frac{1}{3}$ of fish, stem
 black to just before origin of branches,
 beyond swollen and white with small
 translucent terminal appendage ending
 in small rounded body; branches
 originate $\frac{5}{16}$ barbel length, all 3
 similar, long, slender, pigmented except
 near bases, with short filaments longer
 ones bearing rounded or oval bodies;

stem of each branch ends in rounded or oval body from which 2 or 3 filaments arise, each similarly ending in minute body with 2 to 4 fine terminal filaments; interorbital $6\frac{1}{2}$ in head.

Lateral photophores 29 between gill opening and ventral, 13 between ventral and anal; ventral series 7 between isthmus and pectoral, 29 between pectoral and ventral, 13 between ventral and anal, 22 between anal and caudal.

D. 25; A. 42; pectoral rays 6 or 7, filiform, twice long as head; ventral rays 8.

Length 108 mm. to caudal base.
(Regan and Trewavas.)

Atlantic.

Eustomias dubius Parr

Eustomias dubius Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 66, figs. 38 (outline) 36 d (end of barbel). N. $23^{\circ}58'$ W. $77^{\circ}26'$, 7000 feet. —

Regan and Trewavas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 88, fig. 68 (end of barbel) (Caribbean Sea near St. Croix N. $17^{\circ}43'$ W. $64^{\circ}56'$; N. $17^{\circ}41'$ W. $60^{\circ}58'$ east of Barbuda; 600 to 1500 meters).

Depth 11 to 15; head $7\frac{1}{2}$ to 8. Snout $2\frac{1}{3}$ in head; eye $4\frac{1}{2}$ to 6, 2 in snout; maxillary extends $1\frac{2}{3}$ eye diameters behind eye, length $1\frac{1}{10}$ in head; 13 teeth on each premaxillary, first and second as fangs; barbel nearly 3 to $3\frac{1}{2}$ in body without caudal, tapering, axis pigmented, bulb divided

by deep terminal notch into 2 lobes; shorter rounded and longer tapering, bearing 2 minute terminal filaments; interorbital $7\frac{1}{2}$ to 8 in head.

Postocular luminous organ $5\frac{1}{5}$ in head. Lateral photophores 33 to 35 between gill opening and ventral, 15 to 17 between ventral and anal; ventral series 7 or 8 between isthmus and pectoral, 32 to 35 between pectoral and ventral, 13 to 16 between ventral and anal, 18 to 20 between anal and caudal.

D. 23 or 24, fin height $4\frac{1}{5}$ in head; A. 38 or 39, fin height $3\frac{1}{8}$; caudal $2\frac{2}{3}$; least depth of caudal peduncle 7; pectoral $1\frac{1}{3}$, rays 2; ventral rays 7, fin $7\frac{1}{3}$ in body without caudal.

Length 122 mm. without caudal.
(Parr, Regan and Trewavas.)

Western Atlantic, Caribbean Sea.

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Eustomias enbarbatus Welsh

Eustomias enbarbatus Welsh, Proc. U. S.

Nat. Mus., vol. 62, art. 3, 1923, p. 7, figs. 7

and 8., Station 10192, 220 miles northeast

from Great Abaco Island, ~~in~~ 1000

meters. — Parr, Bull. Bingham Oceanogr.

{ Station 10173, 185 miles west from Bermuda,
100 meters;

Collection, vol. 3, art. 2, Dec. 30, 1927, p. 76

(compiled). — Regan and Trewavas, Danish
Iceland Exped. Oceanogr. Rep., no. 6, March 30,

1930, p. 79 (N. $27^{\circ}2'$ W. $53^{\circ}39'$, 150 meters).

Depth 8 to $10\frac{3}{5}$; head 6 to 7, width
 $2\frac{3}{4}$ to 3. Snout $2\frac{1}{2}$ to $2\frac{3}{5}$ in head
from snout tip; eye 5 to 6?, 2 to $2\frac{1}{4}$ in

115-8

snout, $1\frac{1}{2}$ to $1\frac{3}{5}$ in interorbital;
maxillary extends 1 to $1\frac{3}{4}$ eye
diameters behind eye, length $1\frac{1}{8}$
to $1\frac{1}{4}$ in head from snout tip; teeth
unequal canines, upper with first,
second and fifth largest, lower with
second, fourth and seventh; palate
toothless; tongue with 3 pairs of long
recurved teeth; barbel long, filamentous,
inserted below eye, length $3\frac{1}{4}$ in
combined head and body to caudal
base, with ovoid terminal bulb,
near base long filament given off
anteriorly; 5 short filaments extend
from terminal end of bulb of barbel,

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of which 4 simple and fifth ends
in ovoid body giving off 2 filaments,
each in turn bifurcate; interorbital
 $4?$ to $4\frac{1}{2}$, rather high, convex. No
gill rakers; gill filaments $1\frac{1}{3}$ in eye.

Small luminous body close
above maxillary and behind eye.
Two rows of small, circular, nearly
equidistant photophores on sides of
body ventrally, upper row to end of
anal and lower to fifth anal ray,
27 spots in each row from pectoral
to ventral.

D. 23, inserted over first third
of anal, fin height $2\frac{1}{5}$ to $2\frac{1}{3}$ in

head; D. 35, fin height $2\frac{1}{3}$; caudal^d 2, small, forked; pectoral $1\frac{4}{5}$, rays 3, not united basally with narrow membrane on both sides of each ray; ventral 1, rays 7, two outer short; least depth of caudal peduncle $1\frac{1}{4}$ in eye.

Velvety black, with minute white granulations, most numerous along lower line of photophores. Barbel white, core punctulate with black, bulb at tip and bodies in filament yellow. Iris whitish, paired ones slightly dusky.

Atlantic Ocean.

84282 U.S.N.M. 185 miles west
from Bermuda. Grampus (Bache)
Station 10173. In 100 meters. February
4, 1914. Length 69 mm. Type.

84283 U.S.N.M. 220 miles north
east of Great Abaco Island. Grampus
(Bache) Station 10192. In 1000 meters.
February 26, 1914. Length 59 mm.
Paratype.

Eustomias filiferum (Gilchrist)

Neostomias filiferum Gilchrist, Marine

Invest. South Africa, vol. 4, 1908, p. 168, pl.

50. Off Cape Point East north east $36\frac{1}{2}$

miles, in 660 fathoms. — Barnard, Ann.

South African Mus., vol. 21, pt. 1, June

1925, p. 138 (compiled).

Eustomias filiferum Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, December

30, 1927, p. 47 (compiled).

Eustomias filifer Regan and Trewavas, Danish

Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930,

p. 108, figs. 103 - 104 (ends of barbels) (N. $25^{\circ}11'$

W. $20^{\circ}57'$, 600 meters).

Depth $10\frac{2}{5}$; head $7\frac{7}{8}$. Snout $3\frac{1}{8}$ in head; eye $5\frac{1}{3}$, 2 in snout; maxillary extends $2\frac{1}{2}$ eye diameters behind eye, length $1\frac{1}{10}$ in head; barbel $1\frac{1}{3}$ in body without caudal, black bodies inside at intervals towards end resembling string of beads, basal part with anterior series of black dots, slight luminous swelling little beyond branches; small terminal bulb with several filaments with bead like swellings; branches at first fifth of barbel, median very short, with pair of filamentous branches, ends in bulb with filament and laterals more than 3 times as long, slender, tapering, end in minute bulbs; interorbital low.

Lateral photophores 28 between gill opening and ventral, 14 between ventral and anal; ventral series 7 between isthmus and pectoral, 27 between pectoral and ventral, 14 between ventral and anal, 23 between anal and caudal.

D. 22 to 25, fin height 3 in head;
A. 39 or 40, fin height $2\frac{4}{5}$; caudal
 $2\frac{1}{3}$; least depth of caudal peduncle
 $5\frac{1}{4}$; pectoral $1\frac{1}{5}$, 1 ray; ventral
rays 7, fin 7 in body without caudal.

Length 230 mm. without caudal.

(Gilchrist, Regan and Trewavas.)
Atlantic, South Africa.

Eustomias fissibarbis (Pappenheim)

Neostomias fissibarbis Pappenheim,

Deutsche Südpolar Exped., vol. 15, pt. 2, 1914,

p. 175, text figs. 4-5. N. $24^{\circ}41'$ W. $32^{\circ}21'$;

20 meters, north west of Cape Verde Islands.

Eustomias fissibarbis Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,

p. 81 (compiled). — Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 103, figs. 94 (95a (dentition) ends of barbels),

(N. $24^{\circ}34'$ W. $28^{\circ}4'$; N. $23^{\circ}40'$ W. $43^{\circ}26'$; Caribbean

Sea north of St. Croix N. $17^{\circ}58.5'$ W. $64^{\circ}41'$; off St.

Croix N. $17^{\circ}43'$ W. $64^{\circ}56'$; Gulf of Mexico north west
of Cuba N. $22^{\circ}06'$ W. $84^{\circ}58'$; between Florida
and Cuba N. $23^{\circ}35'$ W. $81^{\circ}54'$; N. $23^{\circ}13'$ W. $82^{\circ}21'$;
50 to 1200 meters).

Eustomias nigrifilis Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, Dec. 30,
1927, p. 81, figs. 8 and 49. N. $24^{\circ}29'$ W. $77^{\circ}29'$,
8000 feet

Depth 10 to 12; head 6 to 8. Eye $5\frac{1}{2}$ to
 $6\frac{1}{2}$ in head; barbel 1 to $1\frac{1}{3}$ in head,
stem and basal half of bulb pigmented,
rather elongate bulb with 2 to 4 median
and 1 to 3 pairs of filaments terminally;
median branch rather stout, ending in
small ovate bulb bearing on common
stalk several filaments ending in
swellings; stem of branch and basal
half of ^{its} bulb pigmented; lateral branches
originating from median branch some

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distance from main stem of barbel,
each divides into 2, limbs pigmented
except terminally, may contain oblong
or oval swellings and may bear some
short filaments; interorbital 5 to $5\frac{1}{2}$
in head.

Lateral photophores 26 to 29 between
gill opening and ventral, 14 to 16 between
ventral and anal; ventral series 7 between
isthmus and pectoral, 27 or 28 between
pectoral and ventral, 13 to 15 between
ventral and anal, 19 to 21 between anal
and caudal.

D. 22 to 26; A. 36 to 41; pectoral rays
2; ventral rays 7.

Length 100 mm. without caudal.
(Regan and Trewavas.)

Atlantic, Caribbean Sea.

Eustomias frondosus Regan and Trewavas
Eustomias frondosus Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 103, fig. 22 (ends of barbels).
 N. $22^{\circ}43'$ W. $45^{\circ}18'$; N. 25° W. $64^{\circ}10'$; Bahamas N. 25°
 $50'$ W. $76^{\circ}55'$; N. $24^{\circ}5'$ W. $74^{\circ}36'$; N. $26^{\circ}56'$ W. $53^{\circ}9'$;
 200 to 800 meters.

Depth 8 to 12; head $6\frac{1}{3}$ to $8\frac{2}{3}$. Eye
 5 in head; barbel equals or little longer
 than head, pigment of stem extends to
 posterior (sometimes anterior?) part of
 large, ovate or elongate bulb, which bears
 rather long branched terminal filament
 terminal to pigmented part; 1 or more
 smaller median filaments and 1 to 2 pairs

1169

of lateral filaments; median branch represented by slender filament, sometimes bearing minute bulb; lateral branches sometimes united at base, each divided into 2 tapering branches bearing several filaments, some with swellings; branches pigmented basally in adult.

Lateral photophores 24 to 26 between gill opening and ventral, 13 to 16 between ventral and anal; ventral series 7 between isthmus and pectoral, 24 or 25 between pectoral and ventral, 14 or 15 between ventral and anal, 20 to 22 between anal and caudal.

D. 23 to 25; A. 39 to 45; pectoral rays 2, sometimes with minute third ray; ventral rays 7.

Length 100 mm. without caudal.
(Regan and Trewavas.)

Atlantic.

Eustomias furcifer Regan and Trewavas

Eustomias furcifer Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
79b (dentition)

March 10, 1930, p. 96, fig. 83 (end of barbel).

N. $37^{\circ}23'$ W. $26^{\circ}2'$, 3000 meters.

Depth $11\frac{1}{2}$; head $7\frac{2}{3}$. Eye 7 in head;
barbel little more than $\frac{1}{4}$ fish, pigmented
stem to little beyond origin of branches,
beyond somewhat swollen and white,
except posterior black streak which
may be on axis; oval bulb without
appendages, branches originating $\frac{4}{5}$
barbel length; lateral branches simple
unpigmented filaments; median branch
extending beyond end of bulb, unpigmented,

forked terminally, each limb of fork bearing several filaments; interorbital $6\frac{1}{4}$ in head.

Lateral photophores 28 between gill opening and ventral, 14 between ventral and anal; ventral series 7 between isthmus and pectoral, 28 between pectoral and ventral, 13 between ventral and anal, 23 between anal and caudal.

D. 24; A. 45; pectoral rays 6; ventral rays 8.

Length 138 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias globulifer Regan and Trewavas
Eustomias globulifer Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 93, fig. 76a (end of barbel).
 Caribbean Sea near Martinique N. $14^{\circ}38'$ W. 61°
 16', 600 meters.

Snout $2\frac{1}{3}$ in head;
 Depth 14; head $8\frac{3}{4}$. eye 6 ~~in head~~ ~~in head~~;
 barbel 6 in fish, axis pigmented,
 densely just below small oval bulb
 bearing an appendage long as itself,
 translucent with dark axis;
 interorbital 6 in head.

Lateral photophores 33 between
 gill opening and ventral, 16 between
 ventral and anal; ventral series 7

1173

between isthmus and pectoral, 31
between pectoral and ventral, 16
between ventral and anal, 17 between
anal and caudal.

D. 23; A. 33; pectoral rays 2.

Length 70 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

Eustomias leptobolus Regan and Trewavas

Eustomias leptobolus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,
March 10, 1930, p. 94, fig. 77a (end of
barbel). Between Florida and Cuba N. $23^{\circ}13'$
W. $82^{\circ}21'$, 800 meters.

Depth $1\frac{1}{2}$; head $8\frac{2}{3}$. Eye $4\frac{2}{3}$ in
head; barbel $\frac{1}{2}$ of fish, stem apparently
white, axis with minute black dots;
elongate bulb divided by constriction
into narrower basal and shorter
and broader terminal part; small
terminal filament; interorbital $7\frac{1}{3}$ in
head.

Lateral photophores 33 between

gill opening and ventral, 16 between
ventral and anal; ventral series
7 between isthmus and pectoral, 33
between pectoral and ventral, 16
between ventral and anal, 17 between
anal and caudal.

D. 25; A. 38; pectoral rays 2.

Length 95 mm. to caudal base.

(Regan and Trewavas.)

Straits of Florida.

Eustomias lipochirus Regan and Trewavas
Eustomias lipochirus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,
March 10, 1930, p. 95, fig. 80a (end of barbel).
Caribbean Sea near St. Croix N. $17^{\circ}43'$ W. $64^{\circ}56'$,
800 meters.

Depth 12; head 8. Eye 5 in head;
barbel little less than head, axis
pigmented within short space of bulb,
anterior series of black dots, rather
small bulb ovate, terminally with
an anterior corner; interorbital $5\frac{1}{2}$ in head.

Lateral photophores 28 between
gill opening and ventral, 13 between
ventral and anal; ventral series

35 between isthmus and ventral, ¹⁵⁷⁷
12 between ventral and anal, 20
between anal and caudal.

D. 24; A. 40; no pectoral rays.

Length 88 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

Eustomias longibarbus Parr

Eustomias longibarbus Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30,

1927, p. 64, fig. 35 (outline) 36a (end of barbel). N. 24° W. $77^{\circ}17'$, 6000 feet; N. $23^{\circ}49'$

W. $76^{\circ}59'$, 7000 feet.

Eustomias longibarba Regan and Trevaas,

Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 86, figs. 66-a-b (ends

of barbels) ^{67c (dentition)} (N. $31^{\circ}59'$ W. $59^{\circ}52'$; N. $32^{\circ}55'$ W. 21°

51° ; Caribbean Sea west of Jamaica N. $18^{\circ}50'$

W. $79^{\circ}7'$; N. $24^{\circ}5'$ W. $74^{\circ}36'$; 110 to 2000 meters).

? Eustomias microcephalus Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 75, fig. 43. N. $23^{\circ}49'$ W. $76^{\circ}59'$, 7000 feet.

1179

Depth 11 to 13; head $7\frac{1}{2}$ to 9. Eye 5 in head; barbel from little less than $\frac{1}{2}$ to $\frac{2}{3}$ length of fish, axis of stem lightly or heavily pigmented, appearing nearly white or blackish; elongate bulb with simple terminal appendage from $\frac{1}{4}$ to nearly long as bulb, containing axis bearing minute rounded bodies within translucent sheath; interorbital 6 to 7 in head.

Lateral photophores 32 to 35 , ^{between} gill opening and ventral, 17 or 18 between ventral and anal; ventral series 7 between isthmus and pectoral, 33 or 34 between pectoral and ventral, 17 to 19 between ventral and anal, 18 to 20 between anal and caudal.

D. 23 to 26; A. 36 to 38; pectoral rays 3.

Length 116 mm. without caudal.

(Regan and Trewavas.)
Atlantic, Caribbean Sea.

Eustomias macronema Regan and Trewavas

Eustomias macronema Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 101, fig. 91 (end of barbel).

N. $30^{\circ}17'$ W. $20^{\circ}44'$, 600 meters.

Depth $13\frac{1}{2}$; head $9\frac{1}{2}$. Eye 7 in head; barbel long as head, pigment of stem extending along front edge of large bulb, which concave anteriorly, convex posteriorly, bears long stout terminal filament, lateral branches each divided into longer pigmented and smaller white branch, all 4 bearing filaments, some with terminal swellings; median branch similar

but incomplete; interorbital $4\frac{1}{2}$ ¹¹⁸¹ on head.

Lateral photophores 29 between gill opening and ventral, 14 between ventral and anal; ventral series 7 between isthmus and pectoral, 28 between pectoral and ventral, 14 between ventral and anal, 21 between anal and caudal.

D. 22; A. 37; pectoral rays 2; ventral rays 7.

Length 67 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias macrophthalmus Parr

Eustomias macrophthalmus Parr, Bull.
Bingham Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, p. 67, figs. 39 (outline) 36b.

(end of barbel). N. $22^{\circ}31'W$. $74^{\circ}26'$, 10000 feet.

Eustomias macrophthalmus Regan and

Trewavas, Danish Dana Exped. Oceanogr. Rep.,

no. 6, March 10, 1930, p. 93, fig. 77 (end of

barbel) (Caribbean Sea near St. Croix N. $17^{\circ}43'$

W. $64^{\circ}56'$, 300 meters).

? Eustomias micropterygius Parr, Bull.

Bingham Oceanogr. Collection, vol. 3, art.

2, Dec. 30, 1927, p. 65, fig. 37 (outline).

N. $23^{\circ}55'W$. $77^{\circ}9'$, 4000 to 7000 feet.

Depth $11\frac{1}{2}$; head $7\frac{1}{2}$. Eye $4\frac{1}{2}$ in head; barbel nearly long as fish, stem white, elongate bulb with minute terminal filament; interorbital $6\frac{1}{4}$ in head.

Lateral photophores 32 between gill opening and ventral, 17 between ventral and anal; ventral series 7 between isthmus and pectoral, 31 between pectoral and ventral, 17 between ventral and anal, 18 between anal and caudal.

D. 25; A. 37; pectoral rays 2.

Length 100 mm. without caudal.

(Regan and Trewavas.)

Western Atlantic, Caribbean Sea.

Eustomias macrurus Regan and Trewavas

Eustomias macrurus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 78, pl. 7, fig. 2, text fig. 53

(barbel). N. $25^{\circ}1'$ W. $56^{\circ}21'$, 50 meters; N. 33°

$18'W$, $56^{\circ}3'$, 65 meters.

Depth 13 to $15\frac{1}{5}$; head 8 to 10. Eye
5 to $6\frac{1}{3}$ in head; barbel equals or
little longer than head, ending in
oblong bulb, white stem with yellowish
patches; eye nearly equals interorbital.

Lateral photophores 29 between
gill opening and ventral, 16 to 18 between
ventral and anal; ventral series 7
between isthmus and pectoral, 28 or 29

1185

between pectoral and ventral, 16 or
17 between ventral and anal, 24 or
25 between anal and caudal.

D. 25 to 29; A. 45; pectoral rays
9; ventral rays 7, origin median in
body, ^{fin} reaches vent; tail long. Dorsal
and anal rays and caudal photophores
rather widely spaced.

Length 108 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias melanobolus Regan and Trewavas

Eustomias melanobolus Regan and Trewavas,
 Danish Dana^{Exped.} Oceanogr. Rep., No. 6, March
 10, 1930, p. 95, fig. 80b (end of barbel). N. 21°

57' W. 22° 58', 300 meters.

Depth 14; head 8. Eye $5\frac{1}{2}$ in head;
 barbel $\frac{4}{5}$ head, axis black, sheath
 of stem translucent posteriorly,
 pigmented anteriorly within short
 space of oblong bulb, which encloses
 central black body showing through
 semi-opaque white tissue of bulb;
 interorbital $5\frac{1}{4}$ in head.

Photophores indistinct, ventral
 series 33 between isthmus and ventral,

L187

29 between gill opening and ventral,
14 between ventral and anal, 22
between anal and caudal.

D. 25; A. 42; no pectoral rays.

Length 60 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias melanonema Regan and Trewavas

Eustomias melanonema Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 85, fig. 64 b (end of barbel).

N. $13^{\circ}35'$ W. $30^{\circ}11'$, 300 meters.

Depth 13; head $8\frac{1}{4}$ to $10\frac{1}{2}$. Eye 5
to $5\frac{1}{2}$ in head; barbel $1\frac{2}{3}$ of fish,
stem lightly pigmented or unpigmented;
2 bulbs, terminal nearly twice long as
basal, interspace somewhat greater than
terminal bulb; 6 pigmented filaments
arise together, separately, from
terminal end of terminal bulb and
unpigmented filament near by;
young with terminal bulb bearing

1189

8 pigmented filaments in 3 groups;
interorbital 6 in head.

Lateral photophores $3\frac{1}{2}$ ^{or 33} between
gill opening and ventral, 18 between
ventral abd anal; ventral series
7 between isthmus and pectoral, $3\frac{1}{2}$ ^{or 33}
between pectoral and ventral, 17 or 18
between ventral and anal, 18 to 20
between anal and caudal.

$D_{23\frac{1}{2}}$; A_{37} ; pectoral rays 3.

Length 91 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias melanostigma Regan and Trewavas

Eustomias melanostigma Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 30, 1930, p. 85, pl. 8, fig. 2, text fig.

64a (end of barbel). Caribbean Sea near St.

Croix N. $17^{\circ}43'W$. $64^{\circ}56'$, 300 meters; N. $17^{\circ}45'$

W. $64^{\circ}55.5'$, 300 meters.

Depth $10\frac{1}{2}$ to 11; head 8. Eye nearly 6
in head; barbel $\frac{3}{4}$ of fish, stem
unpigmented, terminal larger of 2
bulbs, rounded or ovate, interspace
twice or somewhat more than terminal
bulb; pigment spot at base of
terminal bulb bearing 5 pigmented
filaments on short stalks and

1191

sometimes separate unpigmented filament; interorbital 6 in head.

Lateral photophores 30 to 33 between gill opening and ventral, 20 or 21 between ventral and anal; ventral series 7 between isthmus and pectoral, 31 to 33 between pectoral and ventral, 19 or 20 between ventral and anal, 19 between anal and caudal.

D. 26; A. 38; pectoral rays 3.

Length 106 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

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Eustomias micraster (Parr)

Eustomias bibulbosus subspecies micraster
Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, pp. 70, 72, fig. 44.

→ N. $24^{\circ}51'W$. $76^{\circ}38'$, 7000 feet.

Eustomias bibulbosus micraster Parr,
Bull. Bingham Oceanogr. Collection, vol. 3,
art. 2, Dec. 30, 1927, fig. 44.

(Caribbean Sea off Dominica N. $15^{\circ}8'W$. $61^{\circ}31'$;

Caribbean Sea off St. Croix N. $17^{\circ}58.5'W$. $64^{\circ}41'$

and N. $17^{\circ}54'W$. $64^{\circ}54'$; north of Virgin Islands

N. $19^{\circ}01'W$. $65^{\circ}23'$; N. $17^{\circ}43'W$. $64^{\circ}56'$; 300 to 1000 meters)

Depth 10 to 12; head 7 to $8\frac{1}{2}$. Eye 5
in head; barbel $\frac{1}{2}$ to nearly long as
fish, axis pigmented; 2 bulbs, sometimes

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Eustomias micraster (Parr)

Eustomias bibulboeus subspecies micraster
Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, pp. 70, 72, fig. 44.

N. $24^{\circ}51'$ W. $76^{\circ}38'$; 7000 feet.

Eustomias micraster Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 84, fig. 62 (end of barbel)
(Caribbean Sea off Dominica N. $15^{\circ}8'$ W. $61^{\circ}31'$;
Caribbean Sea off St. Croix N. $17^{\circ}58.5'$ W. $64^{\circ}41'$
and N. $17^{\circ}54'$ W. $64^{\circ}54'$; north of Virgin Islands
N. $19^{\circ}01'$ W. $65^{\circ}23'$; N. $17^{\circ}43'$ W. $64^{\circ}56'$; 300 to 1000 meters).

Depth 10 to 12; head 7 to $8\frac{1}{2}$. Eye 5
in head; barbel $\frac{1}{2}$ to nearly long as
fish, axis pigmented; 2 bulbs, sometimes

subequal, terminal usually smaller,
interspace 2 to 4 times diameter of
larger; terminal appendage
tapering, when complete once to
nearly twice long as head, 4 to 8
branches near base and rarely others
further along; all branches short
filaments, generally with terminal
swelling and sometimes with series;
interorbital 7 to 8 in head.

Lateral photophores 30 to 33 between
gill opening and ventral, 17 to 19 between
ventral and anal; ventral series
30 to 32 between pectoral and ventral,
17 to 19 between ventral and anal,
18 to 21 between anal and caudal.
(7 between isthmus and pectoral,)

D. 21 to 26; A. 36 to 40.

Length 95 mm. without caudal.
(Regan and Trewavas.)
Western Atlantic, Caribbean Sea.

Eustomias monoclonus Regan and Trewavas
Eustomias monochrous Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 105, figs. 95b (dentition)
97 (end of barbel). Caribbean Sea off St. Croix
N. $17^{\circ}58.5'W.$ $64^{\circ}41'$ and N. $17^{\circ}54'W.$ $64^{\circ}54'$, 2000
meters.

Depth 11; head $8\frac{1}{2}$. Eye $6\frac{3}{4}$ in
head; barbel nearly long as head, stem
and basal $\frac{3}{4}$ of bulb pigmented;
terminal part of bulb separated from
pigmented part by constriction and
bears pair of minute branched
filaments; single small branch, slender,
unpigmented, ending in minute bulb

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with 2 terminal filaments; interorbital
 $4\frac{1}{2}$ in head.

Lateral photophores 29 between gill opening and ventral, 13 between ventral and anal; ventral series 7 between isthmus and pectoral, 28 between pectoral and ventral, 13 or 14 between ventral and anal, 19 between anal and caudal.

D. 23; A. 40; pectoral rays 2;
ventral rays 7.

Length 76 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

Eustomias monodactylus Regan and Trewavas

Eustomias monodactylus Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 107, pl. 9, fig. 2, text figs.
 101 (young) and 102 (end of barbel). Atlantic
 north of Cape Verde Islands N. $19^{\circ}22'$ W. $24^{\circ}6'$,
 500 meters; N. $10^{\circ}16'$ W. $40^{\circ}41'$, 100 meters; N. 36°
 $28'$ W. $8^{\circ}38'$, 300 meters; N. $28^{\circ}15'$ W. 56° , 1000 meters.

Depth 10; head 7 to 9. Eye 6 to $6\frac{1}{2}$ in
 head; barbel $\frac{1}{5}$ to $\frac{1}{4}$ of fish, stem
 basally with axis pigmented or not,
 with anterior series of black dots;
 at half length of barbel elongate bulb,
 beyond which stem unpigmented and
 ends in small swelling; branches

1197

originating about $\frac{1}{3}$ length, all unpigmented; median branch rather short and slender, with terminal swelling; lateral^{al} branches longer, bearing several filaments, some with swellings; interorbital 5 to 6 in head.

Lateral photophores 28 or 29 between gill opening and ventral, 13 or 14 between ventral and anal; ventral series 7 or 8 between isthmus and pectoral, 28 between pectoral and ventral, 14 between ventral and anal, 21 between anal and caudal.

D. 22 to 24; A. 44 or 45; pectoral with 1 ray; ventral rays 7.

Length 82 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eutamias obscurus Vaillant

Eustomias obscurus Vaillant, Exped.

Trav. Talisman, Poiss., 1888, p. 113, pl.

8, figs. 3-a. Azores, 2792 meters;
La Nature, 1884, p. 185, fig. (no description). —

↑ Hirt, Depths of the Ocean, 1912, p. 611

— Jugmayer, Riv. Camp. Sci. Monaco, vol. 35,
1911, p. 75 (N. $36^{\circ}5'30''$ W. $9^{\circ}00'30''$, 3660 meters).
p. 204 (copied). —

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, p. 63 (copied).—

Regan and Trewavas, Danish Dana Exped.
Oceanogr. Rep., no. 6, March 10, 1930, p. 81,

fig. 58 (barbels), pl. 7, fig. 4 (off Madeira,
mid North Atlantic, off Cape Blanco, north east
of Lesser Antilles, south east of Bermuda,
south west of Bermuda, north east of Haiti;

Eustomias obscurus Vaillant

Eustomias obscurus Vaillant, Exped.

Trav. Talisman, Poiss., 1888, p. 113, pl.

8, figs. 3-a. Azores, 2792 meters; La hature, 1884, p. 185, fig. (no description). —

Hort, Depths of the Ocean, 1912, p. 611

(N. 35° 10' W. 7° 55' off Morocco).

Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 204 (reference). — Goode and Bean, Oceanic Ichth., 1895, p. 111, pl. 36, fig. 135 (copied). —

— Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 63 (copied). —

Regan and Trewavas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 81,

fig. 58 (barbels), pl. 7, fig. 4 (off Madeira, mid North Atlantic, off Cape Blanco, north east of Lesser Antilles, south east of Bermuda, south west of Bermuda, north east of Haiti;

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north of Porto Rico, Caribbean Sea south
of Virgin Islands, east of Bermuda,
off Portugal, off Canaries, off Cape Verde
Islands, Caribbean Sea near Martinique,
Caribbean Sea near St. Croix, off Cape Hatteras,
Azores; 25 to 5000 meters).

† Eustomias (Eustomias) obscurus Horman,
Discovery Rep., vol. 2, 1930, p. 313 (S. 00° 56'
W. 14° 8' 30", 250 meters).

20 meters, north west Cape Verde Islands;
N. 15° 6' W. 27° 44', off Cape Verde. — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3, art. 2, sec. 30, 1927, p. 62 (copied).
Eustomias proximus Welsh, Proc. U. S. Nat.

Mus., vol. 62, art. 3, 1923, p. 5, figs. 3-4.

270 miles southeast from Cape Hatteras;
30 miles southwest from Bermuda; 40 miles
north from Little Bahama Bank; 90 miles

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north of Porto Rico, Caribbean Sea south
of Virgin Islands, east of Bermuda,
off Portugal, off Canaries, off Cape Verde
Islands, Caribbean Sea near Martinique,
Caribbean Sea near St. Croix, off Cape Hatteras,
Azores; 25 to 5000 meters).

Eustomias macrorhynchus Pappenheim,
Deutsche Südpolar Exped., vol. 15, pt. 2,
1914, p. 173, text fig. 2. N. $24^{\circ}41'$ W. $32^{\circ}21'$,
20 meters, north west Cape Verde Islands;
N. $15^{\circ}6'$ W. $27^{\circ}44'$, off Cape Verde. — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3, art. 2, sec. 30, 1927, p. 62 (copied).
Eustomias proximus Welsh, Proc. U. S. Nat.

Mus., vol. 62, art. 3, 1923, p. 5, figs. 3-4.

270 miles southeast from Cape Hatteras;
30 miles southwest from Bermuda; 40 miles
north from Little Bahama Bank; 90 miles

north from Great Abaco Island; 50 to 100 meters. — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 63 (compiled).

? Eustomias zugmayeri Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 62 (on Zugmayer).

Depth $12\frac{4}{5}$ to $14\frac{1}{8}$; head $7\frac{3}{4}$ to $8\frac{1}{5}$, width $2\frac{1}{4}$ to $2\frac{4}{5}$. Snout $2\frac{2}{5}$ to $2\frac{1}{2}$ in head from snout tip; eye $4\frac{1}{2}$ to 6, 2 to $2\frac{1}{2}$ in snout, $1\frac{1}{3}$ to $1\frac{1}{2}$ in interorbital; maxillary reaches $1\frac{2}{3}$ eye diameters behind eye, length $1\frac{1}{10}$ to $1\frac{1}{8}$ in head from snout tip; teeth unequal, above first, second,

1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 1, 2, 1, 2, 20
 groups, ventral to anal 1, 1, 1, 2, 1, 2,
 6 groups, anal to end of series 1, 2,
 1, 1, 4 groups; lower row spaced
 singly, hyoid arch 9, isthmus to
 pectoral 7, pectoral to ventral 33,
 ventral to anal 11, anal to caudal 26.

D. 29, origin above base of thirteenth
 anal ray, fin height $2\frac{4}{5}$ to $3\frac{3}{5}$ in
 total head length, ends little before
 end of anal; A. 43, fin height $2\frac{1}{3}$
 to 4; caudal $2\frac{1}{8}$ to $2\frac{1}{4}$, forked;
 pectoral $1\frac{3}{4}$ to 2, rays 3, each with
 blade like membrane extended to tip;
 ventral 1, rays 7, with 2 outer detached

third and seventh largest, lower second, third and sixth largest; palate toothless; tongue with 3 pairs of strong recurved teeth; interorbital $3\frac{4}{5}$ to $4\frac{1}{3}$, slightly depressed. No gill rakers.

Small elongate luminous body close above maxillary behind eye; similar body below front eye edge, also minute photophore at lower eye edge, besides crescentic luminous body on upper edge of eye. Two rows of photophores on lower or ventral side of body; upper row from gill opening to ventral 1, 1, 2, 1, 2,

but not separated as group; least depth of caudal peduncle $1\frac{1}{8}$ to $1\frac{1}{5}$ in eye.

Dark metallic bronze, with numerous minute black punctulations. Iris brownish. Barbel white, bulb pale brownish. Fins whitish.

Atlantic Ocean.

84285 U.S.N.M. 30 miles south west from Bermuda. Grampus (Bache) Station 10180. In 75 meters. February 15, 1914. Length $13\frac{1}{2}$ meters. Type of Eustomia proximus.

84286 U.S.N.M.

1204

Grampus (Bache) Station 10169c. In 50 meters. February 1, 1914. Length 77 or 78 mm. 2 examples.

84287 U.S.N.M.

Grampus (Bache) Station 10211. In 100 meters. March 22, 1914. Length 98 mm.

84288 U.S.N.M.

Grampus (Bache) Station 10186. In 85 meters. February 22, 1914. Length 76 mm.

84289 U.S.N.M.

Grampus (Bache) Station 10209. In 100 meters. March 22, 1914. Length 98 mm.

~~84285~~

Eustomias parri Regan and Trewavas

Eustomias parri Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 94, pl. 8, fig. 3, text figs.

78 (end of barbel), ^{79 (dentition)} N. $28^{\circ}57'$ W. $47^{\circ}24'$,

1000 meters.

Depth $9\frac{1}{4}$; head 7. Snout $2\frac{1}{4}$
in head from snout tip; eye $6\frac{3}{4}$,
3 in snout; maxillary extends
 $1\frac{1}{2}$ eye diameters beyond eye,
length $1\frac{1}{5}$ in head from snout tip;
barbel $3\frac{1}{6}$ in body without caudal,
stem pigmented within short
space of ovate bulb, which bears
somewhat swollen filament; interorbital
6 in head.

Postorbital luminous body less than pupil. Lateral photophores 28 between gill opening to ventral, 12 between ventral and anal; ventral series 7 between isthmus and pectoral, 29 between pectoral and ventral, 12 between ventral and anal, 20 between anal and caudal.

D. 24, fin height $4\frac{1}{2}$ in total head length; A. 42, fin height 4; least depth of caudal peduncle 8; ventral $1\frac{2}{5}$, origin midway between front eye edge and caudal base; pectoral $6\frac{1}{4}$ in body without caudal, rays 4 or 5, slender, unpigmented.

Length 99 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias parvibulbus (Parr)

Eustomias bigelowi subspecies parvibulbus
Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, pp. 78, 79, N.

$22^{\circ}31'W$. $74^{\circ}26'$, 10000 feet.

Eustomias bigelowi parvibulbus Parr, Bull.
Bingham. Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, fig. 44, text fig. 46 (end of barbel).

Eustomias parvibulbus Regan and Trevaas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 98 (compiled).

Depth 9; head 7. Snout 3 in head;
eye $4\frac{1}{2}$, $1\frac{1}{2}$ in snout; maxillary
extends $1\frac{1}{4}$ eye diameters behind eye,
length $1\frac{1}{5}$ in head; barbel $3\frac{1}{3}$ in
body without caudal, stem black,
small terminal bulb with 3 median

terminal filaments, longest with many very short branches; median branch from stem of barbel slender, pigmented, ends in very small bulb bearing tuft of minute filaments; lateral branches twice as long, $1\frac{2}{5}$ length main stem of barbel, very slender and tapering to fine filaments; interorbital low.

Photophores and fins as in Eustomias bigelowi.

Length 204 mm. without caudal.
(Parr, Regan and Trewavas.)

Western Atlantic.

Eustomias patulus Regan and Trewavas

Eustomias patulus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 86, figs. 65 (end of barbel),
67a (dentition).

N. $26^{\circ}15'$ W. $20^{\circ}53'$, 400 meters.

Depth 11; head $7\frac{1}{2}$. Eye 5 in head;
barbel $\frac{3}{5}$ of fish, axis lightly pigmented,
ovate bulb bearing branched terminal
filament; interorbital 8 in head.

Lateral photophores 33 between gill
opening and ventral, 18 between ventral
and anal; ventral series 7 between isthmus
and pectoral, 32 between pectoral and
ventral, 18 between ventral and anal,
18 between anal and caudal.

D. 24; A. 35; pectoral rays ¹²¹⁰3;
ventrals postmedian.

Length 135 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias paucifilis (Parr)

Eustomias bigelowi subspecies paucifilis
Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, p. 78, 79. N. $23^{\circ}58'$
W. $77^{\circ}26'$, 7000 feet.

Eustomias bigelowi paucifilis Parr, Bull.
Bingham Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, fig. 45 (end of barbel).

Eustomias paucifilis Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 99, fig. 87 (end of barbel)
(N. $20^{\circ}26'$ W. $61^{\circ}3'$, 300 meters; N. $12^{\circ}11'$ W. $35^{\circ}49'$,
2000 meters).

Depth 11 to 12; head $7\frac{1}{4}$ to $7\frac{1}{2}$. Eye
6 to 7 in head; barbel nearly long as head,

stem pigmented to origin of branches,
translucent with pigmented axis
beyond; bulb sub-spherical, with
pair of pigment patches, bearing 2
median filaments, 1 or both branched,
and pair of forked filaments; branches
slender, unpigmented, median longest,
tapering, bearing several small filaments;
lateral branches shorter, not or barely
reaching bulb, forked, sometimes with filaments;
interorbital $4\frac{1}{2}$ in head.

Lateral photophores 26 to 28 between
gill opening and ventral, 14 or 15 between
ventral and anal; ventral series
7 between isthmus and pectoral, 28
between pectoral and ventral, 13 or 14
between ventral and anal, 20 or 21
between anal and caudal.

D. 23 to 26; A. 39 to 42; pectoral rays
2; ventral rays 7.

Length 70 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias polyaster Parr

Eustomias polyaster Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, figs. 7 (outline) 42 (end of barbel). N. $22^{\circ}31'$ W. $74^{\circ}26'$, 10000 feet. — Regan and Trewavas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 88, figs. 69 to 71 (ends of barbels; young) (Caribbean Sea north of St. Croix N. $17^{\circ}49'$ W. $64^{\circ}54'$; N. $17^{\circ}43'$ W. $64^{\circ}56'$; north of Porto Rico N. $18^{\circ}35'$ W. 66° ; south of St. Croix N. $17^{\circ}13'$ W. $64^{\circ}58'$; near St. Croix N. $17^{\circ}43'$ W. $64^{\circ}56'$; 300 to 1000 meters).

Depth 11 to 13; head 7 to $8\frac{2}{3}$. Eye $4\frac{2}{3}$ to 6 in head; barbel $\frac{1}{2}$ to nearly $\frac{2}{3}$ of fish, axis white or lightly pigmented;

small rounded or oval basal bulb,
followed by larger bulb divided by
terminal notch into 2 unequal lobes,
longer tapering, bearing long branched
terminal appendage, stem of which
contains several oblong or oval bodies;
interorbital 8 in head.

Lateral photophores 33 to 35 between
gill opening and ventral, 17 or 18 between
ventral and anal; ventral series 7
between isthmus and pectoral, 34 to 36
between pectoral and ventral, 16 or 17
between ventral and anal, 17 or 18 between
anal and caudal.

D. 23 to 26; A. 34 to 40; pectoral
rays 2.

Length 132 mm. without caudal.

(Regan and Trewavas.)

Western Atlantic, Caribbean Sea.

Eustomias pyrifer Regan and Trewavas
Eustomias pyrifer Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 93, fig. 76 b (end of barbel).
Caribbean Sea off St. Croix N. $17^{\circ}58.5'$ W. $64^{\circ}41'$
and N. $17^{\circ}54'$ W. $64^{\circ}54'$, 100 meters.

Depth 11; head 8. Eye $4\frac{2}{3}$ in head;
barbel $\frac{1}{4}$ of fish, axis white with
minute black dots; pear shaped bulb
broader terminally, bearing single
filament little longer than itself with
1 branch; interorbital $1\frac{2}{3}$ in head.

Lateral photophores 34 between
gill opening and ventral, 17 between
ventral and anal; ventral series 7

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between isthmus and pectoral, 33
between pectoral and ventral, 15
between ventral and anal, 17
between anal and caudal.

D. 24; A. 35; pectoral rays 2.

Length 135 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

Eustomias ramulosus Regan and Trewavas
Eustomias ramulosus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 107, figs. 99 (dentition) 100
(end of barbel). N. $10^{\circ}16'$ W. $40^{\circ}41'$, 100 meters.

Depth $10\frac{1}{2}$; head $7\frac{2}{3}$. Eye $6\frac{1}{2}$ in
head; barbel $\frac{2}{5}$ of fish, axis pigmented
throughout; anterior series of black
dots on basal part, little over $\frac{1}{4}$ length
of elongate bulb; small ovate terminal
bulb bearing filament; branches
originating less than $\frac{1}{4}$ length, all
unpigmented and relatively short, less
than $\frac{1}{3}$ of barbel; slender median
branch simple, with 2 small swellings;

each lateral branch forked, 1 limb again forked and 1 of forks again divided; divisions of lateral branches with filaments and most and of filaments with series of swellings. interorbital $5\frac{1}{2}$ in head.

Lateral photophores 27 between gill opening and ventral, 15 between ventral and anal; ventral series 7 between isthmus and pectoral, 27 between pectoral and ventral, 15 between ventral and anal, 21 between anal and caudal.

D. 25; A. 43; pectoral ray long as head and second very small ray in Axis; ventral rays 7.

Length 84 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias regani Norman

Eustomias (Haploclonus) regani Norman,
Discovery Rep., vol. 2, 1930, p. 312, fig. 22.

S. $00^{\circ}56'$ W. $14^{\circ}8'30''$, 73 meters, Atlantic.

Depth $11\frac{1}{4}$; head $8\frac{1}{5}$. Snout $3\frac{1}{6}$ in head; eye $5\frac{1}{2}$, $1\frac{3}{4}$ in snout; maxillary extends $2\frac{3}{4}$ eye diameters behind eye, length $1\frac{1}{10}$ in head; barbel $4\frac{1}{10}$ in body without caudal, small bulb oval, with 3 terminal filaments all longer than bulb, of which 2 posterior broader and anterior longer thread like with 3 minute short basal threads and slight terminal expansion, long filament given off from base of bulb with 2 basal swellings and small terminal filament; interorbital 5 in head.

Postorbital luminous organ very small. Lateral photophores 26 between gill opening and ventral, 12 between ventral and anal; ventral series 7 between isthmus and pectoral, 26

between pectoral and ventral, 12
between ventral and anal, 19 between
anal and caudal.

D. 22?, fin height 2 in head; A.
38, fin height $1\frac{2}{3}$; caudal $1\frac{1}{3}$;
least depth of caudal peduncle 5;
pectoral 2, rays 3; ventral rays 7,
fin equals head.

Length 58 mm.

(Norman.)

Atlantic.

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Eustomias schiffi Beebe

Eustomias schiffi Beebe, Zoologica
N.Y. Zool. Soc., vol. 13, no. 4, March
1932, p. 54. Six miles south of Honsuch
Island, Bermuda, 600 fathoms.

Depth $12 \frac{2}{3}$; head 8. Snout $5 \frac{2}{5}$
in head; eye $5 \frac{1}{3}$, impinging on upper
profile; premaxillary teeth $10 \frac{1}{4}$, ^{equal size} larger
and shorter pair close together at
snout tip, interspace then large pair
of fangs, rest smaller and irregular,
maxillary 18, very small, oblique, below
median symphyseal pair, then very
large pair followed by 15 teeth; barbel
half of body without caudal, long
slender stem with thin core of thickly
specked black chromatophores, antero-
posteriorly stem expands into gradually
widening transparent area, then into
retort-shaped bulb pale brown on
front or lower surface; terminal neck
of retort gives off 15 thread like
tentacles and just before beginning of
neck of retort thick finger like tentacle

arises from upper or hind side ending abruptly; from each side of same region of retort branched processes arise like large terminal one, 1 large one on left, 3 lesser on right which break in turn to 3 to 8 elongate transparent threads.

Postorbital luminous body large. Lateral photophores 34 between pectoral and ventral, 15 from ventral; ventral series 8 between isthmus and pectoral, 32 between pectoral and ventral, 15 between ventral and anal; 18 between anal and caudal.

D. 23; A. 37; pectoral rays 2; ventral rays 7.

Black. Length 115 mm. without caudal.

(Beebe.)

Bermuda.

Eustomias schmidti Regan and Trewavas

Eustomias schmidti Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 100, pl. 9, fig. 3 (outline),

text figs. 89 (end of barbel) 90 (young).

N. $31^{\circ}6'$ W. $41^{\circ}45'$, 150 meters; east of Florida

N. $26^{\circ}13'$ W. $78^{\circ}48'$, 800 meters; N. $10^{\circ}24'$ W. $54^{\circ}38'$,

300 meters.

Depth $9\frac{3}{5}$ to 10; head $6\frac{4}{5}$ to 7.

Snout $2\frac{1}{2}$ to 3 in head from snout tip; eye

$5\frac{1}{2}$ to $5\frac{3}{4}$, $2\frac{1}{5}$ to $2\frac{1}{3}$ in snout;

maxillary extends $1\frac{3}{4}$ to $2\frac{1}{2}$ eye diameters
behind eye, length $1\frac{1}{10}$ to $1\frac{1}{5}$ in head
from snout tip; barbel 1 to $1\frac{1}{5}$, stem
pigmented, large white bulb divided

by constriction into larger oval basal part and shorter rounded terminal part; small filament from base of terminal part of bulb; median branch with short black stem bearing an elongate bulb with pair of small filaments at end; lateral branches unpigmented, $\frac{1}{2}$ length of barbel, each with 1 long and 1 or 2 short branches; interorbital $4\frac{1}{2}$ in head.

Postorbital luminous body $1\frac{1}{2}$ in eye. Lateral photophores 27 or 28 between gill opening and ventral; 15 between ventral and anal; ventral series 7 or 8 between isthmus and pectoral, 27 or 28 between pectoral and ventral, 14 or 15 between ventral and anal, 20 to 22 between anal and caudal.

D. 22 to 26; A. 40 to 44; pectoral rays 2; ventral rays 7.
Length 70 mm. without caudal.
(Regan and Trewavas.)
Atlantic.

Eustomias silvescens Regan and Trewavas
Eustomias silvescens Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 100, pl. 9, fig. 2 (outline),
text fig. 88 (end of barbel). Caribbean Sea
near St. Croix N. $17^{\circ}45'$ W. $64^{\circ}55.5'$, 800
meters).

Depth $1\frac{1}{2}$; head 8. Snout 3 in head
from snout tip; eye $4\frac{2}{3}$, $1\frac{3}{4}$ in snout;
maxillary extends $1\frac{1}{2}$ eye diameters
behind eye, length $1\frac{1}{8}$ in head from
snout tip; barbel $3\frac{3}{5}$ in body without
caudal, stem pigmented to origin of
branches, thence with pigmented axis;
bulb broad, with terminal filament;

median branch twice long as head, unpigmented, proximally swollen, containing number of ovate bodies and bearing number of oval bulbs on short stalks; distally tapering, beaded and bearing several filamentous branches, also beaded; each lateral branch gives off small secondary branch, otherwise similar to median branch, although not so long.

Postorbital luminous body equals eye. Lateral photophores 27 between gill opening and ventral, 15 between ventral and anal; ventral series 7 between isthmus and pectoral, 27 between pectoral and ventral, 14 between ventral and anal.

D. 25; A. 42; pectoral rays 2; ventral rays 7.

Length 111 mm. to caudal base.

(Regan and Trewavas.)
Caribbean Sea.

Eustomias simplex Regan and Trewavas

Eustomias simplex Regan and Trewavas,
 Danish Dana^{Exped.} Oceanogr. Rep., no. 6, March
 10, 1930, p. 87, fig. ^{66c (end of barbel),} 67b (dentition). N. 31°59'
 W. 59°52'; N. 20°26' W. 61°3'; N. 35°42' W. 73°43';
 80 to 300 meters.

Depth 10; head 7 to 7½. Eye 6 in head;
 barbel ½ of fish, ending in simple
 oblong bulb, stem unpigmented or with
 scattered black dots, become more
 numerous just below bulb; interorbital
 6 in head.

Lateral photophores 29 or 30 between
 gill opening and ventral, 12 to 14 between
 ventral and anal; ventral series 7

between isthmus and pectoral, 29 or 30¹²²⁸
between pectoral and ventral, 12 to
14 between ventral and anal, 16 to
18 between anal and caudal.

D. 23 to 26; A. 34 to 36; pectoral
rays 3; ventral postmedian.

Length 75 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias stigmatopleura Regan and Trewavas

Eustomias stigmatopleura Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 77, pl. 7, fig. 1, text fig. 5 1a-b

(barbels) 52 a (dentition). N. $27^{\circ}33'$ W. $26^{\circ}24'$;

Caribbean Sea west of St. Lucia N. $13^{\circ}47'$ W. 61°

$26'$; N. $27^{\circ}2'$ W. $53^{\circ}39'$; 150 to 4000 meters.

Depth 9 to 12; head 6 to 8. Snout $3\frac{1}{3}$
in head from snout tip; eye 6 to 8, $2\frac{1}{5}$
in snout; maxillary extends 2 eye
diameters behind eye, length $1\frac{1}{6}$ in
head from snout tip; barbel long as
head, with large ovate bulb and pair
of long tapering filaments arising
posteriorly from just below bulb;

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stem black, bulb and filaments white; interorbital $5\frac{1}{2}$ to $6\frac{1}{2}$ in head.

Postocular luminous organ $1\frac{2}{3}$ in eye. Lateral photophores 25 to 27 between gill opening and ventral, 15 to 18 between ventral and anal; ventral series 7 between isthmus and pectoral, 25 or 26 between pectoral and ventral, 16 between ventral and anal, 21 or 22 between anal and caudal.

D. 28 to 30, fin height 5 in total head length; A. 37 to 41, fin height 4; caudal $2\frac{3}{4}$; least depth of caudal peduncle 7; pectoral rays 12 or 13, nearly 4 in body without caudal; ventral $6\frac{1}{3}$, rays 8, nearly median, nearly or quite reach anal.

White spots, often more conspicuous than serial photophores, above and below lateral and ventral series. Length 116 mm. without caudal. (Regan and Trewavas.)

Atlantic, Caribbean Sea.

Eustomias tetranema Zugmayer

Eustomias tetranema Zugmayer, Bull.

Inst. Océanogr. Monaco, no. 253, 1913, p. 2.

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, p. 77 (copied). —

Regan and Trevaas, Danish Dana Exped.

Oceanogr. Rep., no. 6, March 10, 1930, p. 106,

figs. 98 (ends of barbels) (N. 32° W. 19° 11'; 400

meters; N. 32° 55' W. 21° 51', 500 meters; type).

Depth 11 to 12; head 8 to 8 1/2. Eye 5 1/2 to
6; barbel 2/7 to 2/5 of fish; stem with
pigmented axis 1/2 and anterior series of
black dots far as origin of branches;
terminal half of stem unpigmented, 3

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or 4 oblong or oval bodies basally and another at end; branches originating little beyond $\frac{1}{3}$ of length, similar, slender, tapering, unpigmented, simple or bearing some minute threads terminally; each branch with 1 to 4 small swellings; interorbital equal to or little greater than eye.

Lateral photophores 28 or 29 between gill opening and pectoral, 14 or 15 between pectoral and ventral; ventral series 7 between isthmus and pectoral, 28 to 30 between pectoral and ventral, 13 or 14 between ventral and anal, 20 or 21 between anal and caudal.

D. 23 to 25; A. 37 to 41; pectoral with 1 ray; ventral rays 7.

Length 110 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias trewavasae NormanEustomias (Hominoxomias) trewavasaeNorman, Discovery Rep., vol. 2, 1930,
p. 313, fig. 23. S. $34^{\circ}48'W$. $16^{\circ}36'$, 1000
meters, South Atlantic.

Depth $11\frac{1}{4}$; head $5\frac{2}{3}$. Snout
 $2\frac{1}{2}$ in head from snout tip; eye 6, $2\frac{1}{4}$
 in snout; maxillary extends $\frac{3}{4}$ an eye
 diameter behind eye, length $1\frac{1}{2}$ in
 head; barbel $2\frac{5}{6}$ in body without
 caudal, with 3 bulbs, median close
 to and somewhat larger than terminal
 which bears knob like development
 without filaments, small luminous
 swelling on stem at some distance from
 basal bulb, bunch of 6 filaments
 deeply pigmented at base comes off
 from stem little terminal of first
 bulb; interorbital low.

Postorbital luminous body small,
 close above maxillary. Lateral photophores
 32 between gill opening and ventral,

16 between ventral and anal; ventral series 7 between isthmus and pectoral, 32 between pectoral and ventral, 16 between ventral and anal, 15 between anal and caudal.

D. 23?, fin height $2\frac{2}{3}$ in total head length; A. 35?, fin height $2\frac{2}{5}$; caudal 2?; least depth of caudal peduncle 7; pectoral $1\frac{5}{2}$, rays 3; ventral rays 7, fin $1\frac{2}{3}$ in head.

Length 60 mm.

(Norman.)

South Atlantic.

Eustomias tiramis Regan and Trewavas

Eustomias tiramis Regan and Trewavas,
 Danish Dana ^{Exped.} Oceanogr. Rep., no. 6, March
 10, 1930, p. 99, fig. 86 (end of barbel). N.

21°47'W. 47°11', 110 meters.

Depth 12; head 8. Eye $5\frac{1}{2}$ in head;
 barbel scarcely longer than head; stem
 pigmented to origin of branches, thence
 pigmented posteriorly and axis pigmented;
 pigment extending on to hind part of large
 subovate bulb; short branches slender,
 simple, unpigmented, each ending in
 minute bulb with terminal filament;
 interorbital $4\frac{1}{2}$ in head.

Lateral photophores 27 between

gill opening and ventral, 17 between
ventral and anal; ventral series
7 between isthmus and pectoral; 27
between pectoral and ventral, 16 between
ventral and anal, 21 between anal
and caudal.

D. 25; A. 41; pectoral rays 2;
ventral rays 7.

Length 73 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Eustomias trituberculatus Regan and Trewavas

Eustomias trituberculatus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 91, figs. 73b (dentition) 74a
(end of barbel). Caribbean Sea near St. Croix
N. $17^{\circ}43'$ W. $64^{\circ}56'$, 100 to 300 meters.

Depth $10\frac{1}{2}$ to $12\frac{1}{2}$; head 8. Eye 5
to $5\frac{1}{2}$ in head; barbel $\frac{1}{5}$ of fish,
axis pigmented; 3 bulbs, median very
near terminal, which larger than
others, ovate, bears minute terminal
filament with 2 or 3 branches; interorbital
 $5\frac{1}{2}$ to 6 in head.

Lateral photophores 31 to 34 between
gill opening and ventral, 16 or 17 between

ventral and anal; ventral series ¹²³⁸
7 or 8 between isthmus and pectoral,
32 between pectoral and ventral, 14
to 16 between ventral and anal, 17 or
18 between anal and caudal.

D. 23 or 24; A. 36; pectoral rays

2.

Length 75 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

Eustomias variabilis Regan and Trewavas
Eustomias variabilis Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 91, figs. 72 (ends of barbels)
 73a (dentition). N. $12^{\circ}11'$ W. $57^{\circ}12'$; Caribbean Sea
 west of St. Lucia N. $13^{\circ}47'$ W. $61^{\circ}26'$; off St. Croix
 N. $17^{\circ}43.7'$ W. $64^{\circ}57'$; N. $17^{\circ}58.5'$ W. $64^{\circ}41'$; west
 of Jamaica N. $18^{\circ}22'$ W. $78^{\circ}38'$; N. $17^{\circ}43'$ W. $64^{\circ}56'$;
 south of St. Croix N. $17^{\circ}13'$ W. $64^{\circ}58'$; N. $17^{\circ}43'$ W.
 $64^{\circ}56'$; near Martinique N. $14^{\circ}38'$ W. $61^{\circ}16'$; near
 St. Croix N. $17^{\circ}43'$ W. $64^{\circ}56'$; N. $17^{\circ}43'$ W. $64^{\circ}56'$;
 N. $17^{\circ}43'$ W. $64^{\circ}56'$; 300 to 4000 meters.

Depth 10 to 13; head 7 to 9. Eye $4\frac{1}{2}$ to
 6 in head; barbel $\frac{1}{5}$ to $\frac{2}{5}$ of fish,
 stem with pigmented axis; 2 well

separated variable bulbs and sometimes 1 or 2 smaller ones between; terminal bulb elongate, ovate or pearshaped, 1 or 2 terminal appendages usually branched, stem and filamentous branches generally beaded; interorbital $5\frac{1}{2}$ to $7\frac{1}{2}$ in head.

Lateral photophores 32 to 34 between gill opening and ventral, 16 or 17 between ventral and anal; ventral series 7 between isthmus and pectoral, 32 or 33 between pectoral and ventral, 15 to 17 between ventral and anal, 16 to 18 between anal and caudal.

D. 21 to 25; A. 33 to 36; pectoral rays 2; ventral rays 7.

Length 145 mm. without caudal.

(Regan and Trewavas.)
Western Atlantic, Caribbean Sea.

Eustomias xenobolus Regan and Trewavas

Eustomias xenobolus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 92, fig. 75 (end of barbel).

Caribbean Sea near St. Croix N. $17^{\circ}43'$ W. 64°

$56'$, 1000 meters.

Depth 14; head 8. Eye 6 in head;
barbel $\frac{2}{9}$ of fish, axis pigmented; bulb
divided, basal part slender, terminal
much broader, rounded, with 3 minute
filaments on short stalks; interorbital
 $8\frac{1}{2}$ in head.

Lateral photophores 15 and 16 between
ventral and anal.

D: 22; A: 36; pectoral rays 2.

Length 170 mm. without caudal. ¹²⁴²
(Regan and Trewavas.)

Caribbean Sea.

Microdontostomias new genus

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Type Microdontostomias orientalis new species.

Body moderately elongate, well compressed, with short constricted caudal peduncle. Head small, compressed. Snout short. Eye large, well advanced in head. Mouth large, gape little curved and mandible protruded. Maxillary slender, long. Upper teeth short, only few on premaxillary noticeable, all lower teeth noticeable larger or conspicuous. No vomerine teeth. Palate with 3 groups of short teeth. Barbel

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short, much less than head, with only slight terminal bulb. Interorbital low. Gill rakers rather few denticles of moderate size. Photophores in rows inferior on body. Dorsal and anal well posterior on body, latter with larger base which extends both little before and behind dorsal. Caudal small, apparently only slightly notched. Paired fins less than head, ventrals inserted well posteriorly or close before anal.

Diagnosis. Known by its rather weak upper dentition, all the teeth firmly erect in the jaws. It appears

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to be allied with Pseudostomias
though with much weaker dentition,
shorter body and more advanced
anal fin.

(Μικρός, small; ὀδούς, tooth;
Stomias.)

Microdentostomias ^{orientalis} ~~persone~~ new species

Depth $8\frac{1}{2}$; head $6\frac{3}{5}$, width 3?

Snout $3\frac{2}{3}$ in head from snout tip;
eye $3\frac{2}{3}$, subequal with snout,
slightly greater than interorbital;
maxillary extends 2 eye diameters
behind eye, length but slightly
less than head from snout tip;
premaxillary teeth with first 3 longest

but none greater than width of bone,
all other much shorter which about
16 on each bone; most of maxillary
edge posteriorly with very fine or
minute teeth; each mandibular ramus
with 10 large curved teeth, first
pair very short then second pair
longest and gradually shorter posteriorly;
barbel $1\frac{2}{3}$ in head, with slight
terminal bulb ending in 2 filaments
which comprise half length of barbel;
interorbital 4, well convex. Gill
rakers 0+6, small denticles, about
equal gill filaments or pupil.

Luminous organ close above

upper maxillary edge below and
~~and~~ posterior to eye, about $\frac{3}{5}$ of
pupil in size; lower lateral
photophores 34 between pectoral
and ventral, 9 between ventral
and anal; lower on ventral series
11 on isthmus, then 39 to ventral,
then 9 to anal and 16 to caudal.

D. 14, fin height 3 in total head
length; A. 18, fin height $2\frac{1}{2}$,
fin origin eye diameter in advance
of dorsal origin; caudal $1\frac{1}{2}$,
pointed; pectoral rays 6, fin
 $2\frac{1}{3}$ in total head length; ventral
equals head, rays 5; least depth

of caudal peduncle equals eye.

Blackish brown, nearly uniform. Iris neutral dusky. Barbel pale, bulb and terminal filaments brownish. Fins whitish.

Diagnosis. Characters contained chiefly in those of the genus.

Type no. U. S. N. M.

D. 5621. Makyan Island (S.), N. 54° W., 3 miles (N. $0^{\circ}15'00''$ E. $127^{\circ}24'35''$), between Gillolo and Makyan. In 298 fathoms.

November 28, 1909. Length 82 mm.

Genus Haplostomias Regan and Trewavas
Haplostomias Regan and Trewavas, Danish
Alana Exped. Oceanogr. Rep., no. 6, March 10,
1930, p. 109. Type: Haplostomias
tentaculatus Regan and Trewavas.

Snout short. Mouth cleft straight.
Premaxillaries and lower jaw with
depressible fangs, simple or with
rudimentary cusp; maxillary with
1 or more erect teeth followed by
row of small oblique teeth. Pair of
teeth on vomer; 5 on each palatine;
2 pairs on basibranchials; pairs
of well developed teeth on gill arches.
Postocular luminous organ large.

Dorsal rays 16 or 17. Anal rays
19 or 20. Dorsal and anal begin
at same vertical, anal extending
further back. Pectorals normal,
rays 5. Ventral rays 7, postmedian.

Distinct from Melanostomias
chiefly in its dentition.

Analysis of species

a¹ Barbel with 1 bulb; depth 9 to 9½;
head 7½ to 7¾. tentaculatus.

a² Barbel with 2 bulbs; depth 7; head
6. bituberosus.

Haplostomias tentaculatus Regan and Trewavas

Haplostomias tentaculatus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 109, pl. 11, fig. 1, text fig.

105-a (fangs) 106-a (end of barbel).

N. $9^{\circ}30'$ W. $42^{\circ}41'$, 300 meters; N. $29^{\circ}31'$ W. 64° , 200

meters; N. $32^{\circ}21'$ W. $64^{\circ}15'$, 80 meters; N. $24^{\circ}43'$

W. $52^{\circ}18'$, 110 meters; Caribbean Sea north of St.

Croix N. $17^{\circ}58.5'$ W. $65^{\circ}45'$; near St. Croix N. $17^{\circ}43'$

W. $64^{\circ}56'$, 100 meters. — Norman, Discovery

Rep., vol. 2, 1930, p. 314, fig. 24 (S. $33^{\circ}50'$ to

$34^{\circ}13'$ E. $16^{\circ}04'$ to $15^{\circ}49'$, 850 to 950 meters).

Depth 9 to $9\frac{1}{2}$; head $7\frac{1}{2}$ to $7\frac{3}{4}$. Snout

5 in head from snout tip; eye 6, $1\frac{1}{5}$ in

snout; maxillary reaches $3\frac{1}{4}$ eye

diameters behind eye, length scarcely less than head from snout tip; Barbel $2\frac{2}{3}$ in body without caudal, stem black, white ovate bulb with terminal fringe of 7 to 10 minute filaments; axis of stem prolonged along edge of bulb, terminally free and forming tentacle like appendage; interorbital low.

Postorbital luminous organ long as orbit. Lateral photophores 24 or 25 between gill opening and ventral, 14 between ventral and anal; ventral series $8 + 2$ between isthmus and pectoral, 25 to 27 between pectoral and ventral, 14 or 15 between ventral and anal, 9 or 10 between anal and caudal.

D. 16 or 17 , fin height $3\frac{2}{5}$ in total head length; A. 19 or 20 , fin height $3\frac{1}{5}$; caudal $1\frac{2}{5}$; least depth of caudal peduncle 7 ; pectoral $1\frac{7}{8}$, rays 5 ; ventral rays 7 , $1\frac{1}{10}$ in total head.

Length 100 mm. without caudal.
Atlantic, Caribbean Sea. (Regan and Trewavas.)

Haplostomias bituberatus Regan and Trewavas

Haplostomias bituberatus Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 110, fig. 106 b (end of barbel).

N. 23° W. 49° 57', 110 meters.

Depth 7; head 6. Eye 4 in head; barbel $2\frac{1}{4}$ times head, with slender stem and 2 bulbs, basal and larger terminal; terminal part of axis adherent to proximal bulb, projecting as tentacle-like appendage beyond.

Postocular luminous organ little less than eye. Lateral series of photophores 24 between gill opening and ventral, 14 between ventral and anal;

ventral series $8 + 2$ between isthmus¹²⁵⁴
and pectoral, 25 between pectoral and
ventral, 15 between ventral and anal,
10 between anal and caudal.

D. 17; A. 20; pectoral rays 5;
ventral rays 7.

Length 20 mm. without caudal.
(Regan and Trewavas.)

Atlantic.

1262

Genus Melanostomias Brauer
Melanostomias Brauer, Zool. Anzeiger,
vol. 25, no. 668, 1902, p. 284. Type
Melanostomias valdiviae Brauer,
designated by Jordan, Genera of
Fishes, pt. 4, 1920, p. 497.

Hematomias Zugmayer, Bull. Inst.
Océanogr. Monaco, no. 193, ^{January 20,} 1911, p. 5.
Type Hematomias gladiator
Zugmayer, monotypic.

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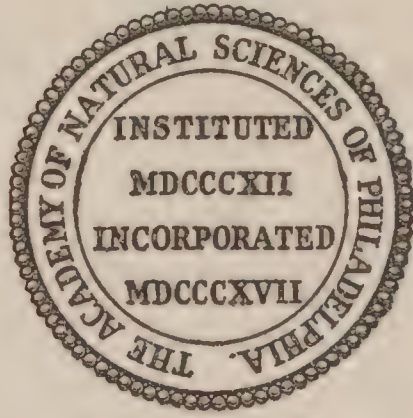
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1263

Snout short. Mouth cleft straight. Premaxillaries and lower jaw with depressible curved fangs, each with pointed extension near end so teeth appear bicuspid, maxillary with 1 or more ^{erect} teeth followed by row of small oblique teeth. Pair of teeth on vomer; row of 3 to 6 teeth on each palatine; usually 2 pairs on tongue; well developed teeth on gill arches. Postocular luminous organ well developed. Dorsal rays 13 to 16.

Anal rays 16 to 20. Dorsal and anal begin in same vertical, anal extends farther back. Pectoral normal, rays 5 or 6. Ventral rays 7, far back, usually twice as distant from snout end as from caudal base.

Analysis of species

a. Pectoral rays 5.

b. Barbel with transparent terminal part, generally expanded and laterally compressed, containing end of axis and 1 or more rounded or oval opaque white luminous bodies.

c. End of axis of barbel straight, barbel $5/6$ to $1\frac{1}{2}$ length of head, stem black or black basally and unpigmented terminally; photophores 23 to 27 in ventral series between pectoral and ventral fins.

d. Terminal part of barbel with 2 strips of loose luminous tissue, 1 in front of axis, 1 behind; white body at proximal end of anterior strip, another at terminal end of posterior strip, at base of tapering terminal appendage usually ends in filament; 23 to 25 photophores in ventral series between pectoral

and ventral.

1266
spilorhynchus.

d.² Terminal part of barbel with 2 white bodies behind axis and 1 in front.

e.¹ Depth $7\frac{1}{3}$; barbel with terminal filament. valdiviae.

e.² Depth $9\frac{1}{2}$; barbel without terminal filament. philippinus.

d.³ Terminal part of barbel with 2 white bodies behind axis, terminal much larger, with strip of granular luminous tissue in front of axis; no filament; 25 photophores in ventral series between pectoral and ventral. melanocaulus.

d.⁴ Terminal part of barbel with 2 white bodies behind axis, terminal much larger, with series of 6 small ones in front of axis; no filament; 26 or 27 photophores in ventral series between pectoral and

and ventral.

1267
heteropogon.

l.² Terminal part of axis of barbel forming curve before luminous bulb, which has smaller luminous bodies basally, series of white luminous bodies anterior to axis; 26 to 29 photophores in ventral series between pectoral and ventral.

l.¹ Barbel long as head, with 2 series of elongate white bodies not paired or regular and terminally 2 larger and longer on 1 side and still larger 1 on other side; no filament; 26 photophores in ventral series between pectoral and ventral.

globulifer.

l.² Barbel twice long as head, basal $\frac{2}{5}$ pigmented stem, terminal $\frac{3}{5}$ with series of white bodies behind axis, last enlarged and in curve of axis; no filament; 26 or

27^{photophores} in ventral series between
pectoral and ventral. biseriatus. 1268

f.³ Barbel 2 to 2 1/2 times head,
unpigmented except at base,
large white bulb in curve of
axis, with some small ones
basal; terminal filament present;
27 to 29 photophores in ventral
series between pectoral and
ventral. albibarba.

c.³ End of barbel axis inclined
forward, single luminous body
subterminally in broad membranous
expansion; Barbel 2 to 3 times
head, unpigmented except at base;
27 or 28 photophores in ventral
series between pectoral and ventral.

g.¹ Luminous bulb of barbel
small, membranous expansion
produced, tapering, ending in
filament. melanops.

g.² Luminous bulb of barbel

1269

large, membranous expansion
not tapering, without filament.
margaritifera.

c.⁴ Terminal part of axis of barbel
forming curve in front of luminous
bulb, no other luminous bodies
basal or before axis; barbel
 $1\frac{2}{3}$ to 2 in head; 27 or 28 photophores
in ventral series between pectoral
and ventral.

h.¹ Barbel stem black, with
white spot near basal end
of swollen cylindrical
terminal part, end with
translucent region and curved
part of axis; terminal filament.
melanopogon.

h.² Barbel stem black, with
white ring at middle of length,
beyond with narrow translucent
expansions before and behind
black stem extending to large
luminous bulb; no filament.

1270
macrophotus.

b.² Barbel simple, $1\frac{1}{3}$ in head,
without bulb, tapers into narrow
filament. mearnsi.

b.³ Barbel with slender stem bearing
terminal bulb. nigter.

a.² Pectoral rays 4; barbel $1\frac{2}{5}$ in head,
ends in 3 bulbs, terminal largest
with small short filament extended
around 1 side from more advanced of
2 small subterminal bulbs. vierecki.

Melanostomias spilorhynchus Regan and Trewavas

Melanostomias spilorhynchus Regan and Trewavas,

Danish Dana, ^{Exped.} Oceanogr. Rep., no. 6, March 10,

1930, p. 112, pl. 10, fig. 1, text fig. 107 (end of

barbel). N. $31^{\circ}6'$ W. $41^{\circ}45'$; N. $35^{\circ}50'$ W. $44^{\circ}55'$; N. 39°

$56'$ W. $52^{\circ}17'$; N. $37^{\circ}46'$ W. $56^{\circ}11'$; N. $33^{\circ}18'$ W. $56^{\circ}03'$; N.

$29^{\circ}52'$ W. $53^{\circ}3'$; N. $28^{\circ}21'$ W. $52^{\circ}40'$; N. $31^{\circ}59'$ W. $59^{\circ}52'$;

N. $32^{\circ}14'$ W. $63^{\circ}51'$; N. $32^{\circ}21'$ W. $64^{\circ}15'$; N. $25^{\circ}35'$ W.

$53^{\circ}13'$; N. $34^{\circ}15'$ W. $16^{\circ}53'$; off Madeira N. $32^{\circ}26'$

W. $16^{\circ}59'$; N. 32° W. $20^{\circ}1'$; N. $30^{\circ}17'$ W. $20^{\circ}44'$; off Cape

Verde N. $15^{\circ}50'$ W. $26^{\circ}32'$; N. $14^{\circ}52'$ W. $28^{\circ}4'$; N. 12°

$59'$ W. $32^{\circ}49'$; N. $32^{\circ}30'$ W. $40^{\circ}4'$; N. $37^{\circ}44'$ W. $25^{\circ}56'$;

off Madeira N. $32^{\circ}45'$ W. $16^{\circ}20'$; 65 to 1000 meters.

Depth 8 to 11; head 6 to 8. Snout ¹²⁷²6
in head from snout tip; eye 5 to 6,
 $1\frac{1}{5}$ in snout; maxillary extends
 $3\frac{1}{2}$ eye diameters behind eye, but
slightly less than head from snout
tip; barbel $1\frac{1}{5}$ to $1\frac{1}{2}$ times head,
terminal part 3 (young) to 5 (adult)
in head; stem and basal end of swollen
part black in adult, lightly pigmented
in young, generally with 1 or 2 white
spots near base of stem; swollen part
unpigmented distally, with straight
axis, before and behind which strip
of rather loose, luminous tissue and
externally membrane, anterior broader,
posterior produced in tapering appendage;
white bulb at basal end of anterior
strip of loose tissue, another at base
of terminal appendage; interorbital low.

Postocular luminous organ nearly or
quite equal to eye. Bluish white spot on
middle of snout and generally 1 before
each eye. Lateral series of photophores
23 or 24 between gill opening and

1273

ventral, 13 or 14 between ventral and anal. Ventral series 8 + 2 or 3 between isthmus and pectoral, 23 to 25 between pectoral and ventral, 13 or 14 between ventral and anal, 9 or 10 between anal and caudal.

D. 14 or 15, fin height $2\frac{1}{2}$ in total head length; A. 18 to 20, fin height $3\frac{1}{4}$; caudal $1\frac{2}{5}$; least depth of caudal peduncle 7; pectoral $2\frac{1}{10}$; ventral 1.

Length 206 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Melanostomias valdiviae Brauer

Melanostomias valdiviae Brauer, Zool.

Anzeiger, vol. 25, no. 668, 1902, p. 285. West coast of Sumatra, in 614 meters; Deutsch.

Tiefsee Exped. Valdivia, vol. 15,

Tiefsee-Fische, 1906, p. 56, text fig. 16, pl.

3, fig. 6 (N. Lat. $0^{\circ}15'2''$ E. Long. $98^{\circ}8'8''$,

in 614 meters). — Regan, Trans. Linn. Soc.

London, series 2, vol. 12, Zool., no. 14, 1908,

p. 218 (near Farguhar Atoll, in 500 to 750

fathoms). — Weber and Beaufort, Fishes

Indo Austral. Archipelago, vol. 2, 1913, p.

115 (compiled). — Parr, Bull. Bingham

Oceanogr. Collection, vol. 3, art. 7, December

30, 1927, p. 44 (compiled). — Regan and

Trewavas, Danish Dana Exped. Oceanogr. ¹²⁷⁵
Rep., no. 6, March 10, 1930, p. 112, fig. 108a
(end of barbel) (Indian Ocean; N. $29^{\circ}24'$
W. $48^{\circ}8'$, 110 meters).

? Melanostomias bartonbeani Parr, Bull.

Bingham Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, p. 45, fig. 25 (outline).

N. $44^{\circ}10'$ W. $52^{\circ}35'$, 150 fathoms. — Regan

and Trewavas, Danish Dana Exped. Oceanogr.

Rep., no. 6, March 10, 1930, p. 110 (reference).

~~Melanostomias obscurus new species~~

Depth $5\frac{7}{8}$; head $6\frac{1}{2}$, width $2\frac{1}{3}$. Snout $5\frac{1}{2}$ in head from snout tip; eye $5\frac{1}{2}$, equals snout, $1\frac{1}{3}$ in interorbital; maxillary reaches preopercle ridge, length $1\frac{1}{8}$ in head from snout tip; interorbital 4, convex. Gill rakers as 9 short, weak denticles along front edge of lower branch of first gill arch; gill filaments $1\frac{1}{4}$ in eye.

Barbel 2 in head measured from snout tip, compressed and expanded little terminally where with pair of white ovoid bodies or

as one each side of median axis
and smaller slightly advanced,
though in addition greatly larger
rounded body beyond which short
terminal point slightly extends;

Large triangular luminous
body on cheek below and behind
eye close along upper maxillary
edge, long as eye; distinct white
photophore on middle of hind
preopercle flange; upper lateral
series 23 between pectoral and
ventral, then 10 to anal origin besides
3 more above front of anal; lower
or ventral series 35 from middle of

isthmus to ventral of which 8 on
isthmus and 2 before pectoral
origin, 10 between ventral and
anal, then 14 to caudal base.

D. 14, I, fin height $2\frac{1}{2}$ in total
head length; A. 18, fin height
 $2\frac{3}{5}$; caudal $1\frac{3}{4}$, forked, lobes
pointed and lower much longer
and with stronger rays; least
depth of caudal peduncle equals
eye; pectoral $2\frac{2}{5}$ in total head
length, rays 4; ventral $6\frac{1}{3}$ in
combined head and body to caudal
base, rays I, 6.

Brownish, becoming sooty or

blackish brown on under surfaces. Large luminous body on cheeks cream white. Iris

slate gray. Fins all pale brown.

Atlantic and Indian Oceans.

~~Diagnosis~~ Closely related to

from Melanostomias valdiviae Brauer slightly

Apparently differing in its deeper body, Brauer's text figure showing depth 7 and the colored figure $8\frac{2}{5}$, he evidently only having one specimen the type, 165 mm. as measured to the caudal base. It

further varies as the text figure shows 18 anal rays as given in the text though the colored figure has

1281

but 17! My specimen has 2 pairs
of teeth on the tongue.

4474. D. 5214. Palanog Light, Masbate,
17° W., 2.60 miles (N. 12° 25' 18" E. 123° 37'
15"), east of Masbate. In 218 fathoms.
April 21, 1908. Length 175 mm.

Pseudostomias new genus

Type Pseudostomias myersi
new species.

Body elongate, compressed, with short constricted caudal peduncle. Head small, compressed. Snout short. Eye large, well advanced in head. Mouth large, gape curved and mandible well protruded. Maxillary slender, long. Teeth mostly all erect, fixed, rather small, little prominent, larger not greatly exceeding smaller, unicuspid. Small depressible tooth each side of vomer and several small teeth on each palatine. Interorbital

low. Barbel short, less than head, with scarcely differentiated terminal bulb. Gill rakers few feeble spinules. Photophores in rows inferior on body. Dorsal and anal well posterior on body, latter with longer base which extends both little before and behind dorsal. Caudal small, apparently only slightly forked. Pectoral slightly less than head. Ventral little longer, inserted far posteriorly or close before anal.

Diagnosis. Chiefly distinguished by its unicuspid, wide set, moderate

erect
teeth in the jaws, fewer in
number than in most genera in
the family. Barbel short and
simple. Fins as in Microdentostomias.

(ψ EV8 7/5, false, with reference
to its superficial resemblance;
Eustomias.)

Pseudostomias myersi new species

Depth $9 \frac{3}{5}$; head 7, width $2 \frac{2}{5}$.

Snout 4 in head from snout tip;
eye 4, subequal with snout, $1 \frac{1}{10}$
in interorbital; maxillary extends
eye diameter behind eye, length
 $1 \frac{1}{5}$ in head from snout tip; 6
wide set teeth on each premaxillary,

first shortest, second longest or nearly equals eye; each mandibular ramus with 3 small teeth in front and 3 large well spaced lateral ones or mostly falling opposite eye; small depressible tooth each side of vomer and 2 or 3 small teeth on each palatine; barbel but slightly less than head, with but slightly swollen terminal bulb ending in single filament little longer than eye; interorbital $4\frac{1}{5}$ in head from snout tip, low, scarcely convex. Gill rakers $0+8$ weak short denticles, barely half

1259

of gill filaments, which about
half of eye.

Rounded luminous organ
 $\frac{3}{5}$ of pupil, close below posterior
portion of eye; lateral series of
photophores 40 between pectoral
and ventral, 7 between ventral and
anal, then skin damaged; lower
or ventral series 12 on isthmus,
then 44 to ventral, 5 between ventral
and anal, then 16 to caudal.

D. 18, fin height 2 in total head
length, origin about $\frac{1}{2}$ eye diameter
behind anal origin; A. 21, fin
height $1\frac{4}{5}$; caudal $2\frac{1}{4}$, apparently

only with slight notch; least depth of caudal peduncle $1\frac{3}{5}$ in ^{in total head length} eye; pectoral $1\frac{3}{4}$, rays 6; ventral 1, rays 6.

Blackish, pale brown where skin has slipped and on most of head. Iris neutral dusky. Fins whitish.

Diagnosis. Characters contained largely in the genus.

Type No. U. S. N. M.

D. 5125. Hogas Island (W.), S. 11° E., 24 miles (N. $10^{\circ}48'E$, $121^{\circ}48'30''$), Sulu Sea, vicinity of southern Panay. In 411 fathoms. February 3.

1908. Length 108 mm.

(For Mr. Frank J. Myers
of Ventnor, New Jersey, an earnest
student of the Rotatoria, to
whom I am indebted for assistance
in securing ichthyological material.)

Melanostomias philippinensis new species 1282
stewarti
Depth $9\frac{1}{2}$; head $6\frac{2}{5}$, width

$2\frac{4}{5}$. Snout $5\frac{1}{2}$ in head from snout tip; eye $5\frac{2}{5}$, $1\frac{1}{10}$ in snout, $1\frac{3}{4}$ in interorbital; maxillary reaches preopercle ridge, $1\frac{1}{5}$ in head from snout tip; interorbital $3\frac{2}{3}$, slightly convex. Gill rakers at 10 minute denticles on lower branch of first gill arch; gill filaments subequal with eye.

barbel $1\frac{2}{5}$ in total head length, expanded terminally to contain 2 nearly equal ovoid white bodies near end of straight axis and larger one still forward; terminal

point not forming filament;

Large triangular luminous body below and behind eye close above maxillary, long as eye; distinct photophore at middle ^{hind} of preopercle flange; upper lateral series 24 from pectoral to ventral, thence 12 to anal of which 2 above front of anal; lower or ventral series 36 before ventral of which 8 on isthmus and 2 before pectoral origin, 10 from ventral to anal origin, thence 14 to caudal base.

D. 14, fin height $3\frac{1}{4}$ in total head length; A. 16, fin height $2\frac{1}{4}$;

1284

caudal $2\frac{1}{5}$, well forked, lobes pointed; least depth of caudal peduncle equals eye; pectoral $2\frac{2}{5}$ in total head, rays 4; ventral $6\frac{4}{5}$ in combined head and body to caudal base, rays I, 6.

Dark brown generally. Luminous organ below eye conspicuously white or cream white. Iris slate gray. Fins pale or brownish white.

Diagnosis. ~~mauritanica~~
~~Indian Ocean~~. My example seems to agree best with Regan's Indian Ocean specimen of but 55 mm. in its slender body, though its barbel is said to be a little

1285

longer than the head. Regan and Trewavas record an Atlantic example, still smaller or only 24 mm. long, with a similar barbel long as head. Both specimens are said to have 2 pairs of teeth on the tongue. My example of the present species differs, however, in that there is only a single pair of small teeth at front of tongue, surely not 2 pairs. It is therefore most closely related to Melanostomias waldoviae in its similar barbel structure, differing chiefly in its slender body

1434. D. 5405. Ponson Island (N.), ¹²⁸⁶
S. 79° E., 6.8 miles (N. $10^{\circ} 50' E.$, 124°
 $26' 18''$), Dupon Bay, Leyte and
vicinity. In 190 fathoms. March 17,
1909. Length .

longer than the head. My specimen differs, however, in that there are 2 small teeth at front of tongue and not 2 pairs. Brauer's figure shows depth $8\frac{1}{2}$ and head $6\frac{1}{4}$.

1434. D. 5405.

Length

Melanostomias melanocaulus Regan and Trewavas

Melanostomias melanocaulus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 113, fig. 108c (end of barbel).

N. $23^{\circ}10'$ W. $66^{\circ}15'$, 900 meters.

Melanostomias bimargaritatus Regan and
Trewavas, Danish Dana Exped. Oceanogr.

Rep., no. 6, March 10, 1930, p. 11 (nomen
nudum; lapsus for Melanostomias
melanocaulus).

Depth 10; head 7. Eye 6 in head;
barbel $1\frac{1}{4}$, with slender black stem
and compressed translucent terminal
part in which straight axis visible,
posterior considerable expansion
containing larger terminal and smaller
basal rounded white body; anteriorly
narrow expansion with strip of granular

luminous tissue.

Postocular luminous organ nearly long as eye. Lateral photophores 7 between gill opening and ventral, 13 between ventral and anal. Ventral series 8 + 3 between isthmus and pectoral, 25 between pectoral and ventral, 14 between ventral and anal, 10 between anal and caudal.

D. 15; A. 19; pectoral rays 5; ventral rays 7.

Length 55 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Melanostomias heteropogon Regan and Trewavas
Melanostomias heteropogon Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 113, fig. 108 b (end of
 barbel). N. $12^{\circ}11'$ W. $57^{\circ}12'$, 300 meters; off
 Madeira N. $33^{\circ}26'$ W. $16^{\circ}59'$, 900 meters.

Depth 10; head 7. Eye $5\frac{1}{2}$ in head;
 barbel $1\frac{1}{6}$ to $1\frac{1}{3}$ long as head, with
 large expanded and compressed translucent
 terminal part; stem black proximally, then
 translucent with blackish axis; axis
 running through expansion, straight, basally
 black, terminally white and opaque; δ
 posterior to axis large oval opaque white
 body, with or without smaller one
 basally; anterior to axis series of 3 to 6
 small unequal rounded white bodies.

Postorbital luminous organ longer
 than eye. Lateral photophores 25 between
 gill opening and ventral, 12 between
 ventral and anal. Ventral series 8 + 2
 between isthmus and pectoral, 26 or 27

1290

between pectoral and ventral, 12 or 13
between ventral and anal, 9 between
anal and caudal.

D. 14; A. 18; pectoral
rays 5; ventral rays 7.

Length 62 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

1291

Melanostomias globulifer new species

Depth $8\frac{1}{4}$; head 7, width $2\frac{1}{5}$.

Snout $4\frac{1}{2}$ in head from upper jaw tip; eye 6, $1\frac{3}{5}$ in snout, 2 in interorbital; maxillary well inclined, reaches preopercle ridge, length $1\frac{1}{10}$ in head from snout tip; interorbital $3\frac{3}{5}$, convex. Gill rakers at 10 minute spinules on lower branch of first gill arch; gill filaments equal eye.

Barbel long as head, with 2 series of elongate white bodies not paired or regular and terminally 2 larger and longer on one side and a still longer one on the other

side, median axis extended but slightly forward of more advanced and without filament;

Large triangular luminous body close above maxillary below and behind eye, length equals $1\frac{1}{4}$ eye diameter; photophore at middle of front eye edge and another at middle of lower eye edge; also one about middle of opercle; upper lateral series 25 between pectoral and ventral, then 10 to anal; lower or ventral series 36 before ventral of which 8 on isthmus and 2 before pectoral origin, 11 between ventral

and anal and then 13 to caudal base.

D. 14, fin height $2\frac{1}{5}$ in total head length; A. 17, fin height 3; caudal $1\frac{2}{3}$, well forked, lobes pointed and lower longer, larger and with rays all stronger; least depth of caudal peduncle equals eye; pectoral $2\frac{1}{8}$ in total head length, rays 5; ventral equals head, rays 7.

Slukey or sooty brown generally, nearly blackish brown on belly and under surfaces. Iris neutral gray. Luminous organ on cheek cream white.

Fins all pale brownish to
whitish.

1294

Diagnosis. Related to the
Atlantic Melanostomias biseriatus
Regan and Trewavas in structure
of the barbel, especially in having
2 sets of globular or ovoid white
bodies along the median axis or
midrib. From it the present species
differs, however, in that the white
bodies extend much nearer the
base of barbel and its terminus
has at least 3 large bodies but
no terminal filament.

1245

Type. — U. S. N. M. No.

2587. D. 5438. Hermana Mayor

Light, S. 21° E., 7.5 miles (N. $15^{\circ} 54' 42''$ E. $119^{\circ} 44' 42''$), west coast of Luzon. In 297 fathoms.
May 8, 1909 Length 180 mm.

Melanostomias biseriatus Regan and Trewavas

Melanostomias biseriatus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 113, fig. 109a (end of barbel).

N. $33^{\circ}18'$ W. $56^{\circ}3'$, 80 to 150 mm.

Depth 10; head 5 to 6. Eye 5 in head;
barbel twice long as head; basal $\frac{3}{5}$
pigmented, terminal part with white
axis, with narrow translucent band in
front and behind each including series
of white luminous bodies; hind series
starting basally with rather large white
body and ending with larger on ^ver-
axis; beyond white bulb and end of axis
an expansion without filament.

Postocular luminous organ little
longer than eye. Lateral photophores 26
between gill opening and vent, 13 between
ventral and anal. Ventral series 8 + 2
between isthmus and pectoral, 26 or 27
between pectoral and ventral, 13 or 14
between ventral and anal, 9 to 11 between

anal and caudal.

D. 13 to 16; A. 16 to 17; pectoral rays 5; ventral rays 7.

Length 25 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

1298

Melanostomias albibarba Regan and Trewavas
Melanostomias albibarba Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,
March 10, 1930, p. 114, fig. 109b (end of barbel).
Caribbean Sea west of St. Lucia N. $13^{\circ}47'$ W. $61^{\circ}26'$;
2500 to 3000 meters; off Dominica N. $15^{\circ}8'$ W.
 $61^{\circ}31'$, 300 meters; Caribbean Sea off St. Croix
N. $17^{\circ}58.5'$ W. $64^{\circ}41'$ and N. $17^{\circ}54'$ W. $64^{\circ}54'$, 300
meters; N. $17^{\circ}43'$ W. $64^{\circ}56'$, ^{100 to} 600 meters; N. $34^{\circ}40'$
W. $33^{\circ}16'$, 1000 meters; N. $13^{\circ}7'$ W. $57^{\circ}20'$, 4000
meters; N. $29^{\circ}24'$ W. $48^{\circ}8'$, 110 meters.

Melanostomias melanops (not Brauer) Parr,
Bull. Bingham Oceanogr. Collection, vol. 3, art.
2, Dec. 30, 1927, p. 42, fig. 24 (end of barbel)
(N. 24° W. $77^{\circ}17'$, 6000 feet; N. $23^{\circ}58'$ W. $77^{\circ}26'$, 7000 feet).

Depth $7\frac{1}{2}$ to 10; head 6 to $7\frac{1}{2}$. Eye 5 to 6 in head; barbel 2 to $2\frac{1}{2}$ in head, unpigmented except at base, sometimes with black dots along hind surface; near end with translucent and compressed expansions, that on anterior side of axis narrow, with series of small white bodies, that on hind side of axis broader, with terminal filament, large white oval body causes axis to curve, with series of smaller ones basal.

Postorbital luminous organ long as eye. Lateral photophores 26 to 28 between isthmus and ventral, 12 or 13 between ventral and anal. Ventral series with 8 + 2 between isthmus and pectoral, 27 to 29 between pectoral and ventral, 13 between ventral and anal, 10 between anal and caudal.

D. 14 to 16; A. 18 or 19; pectoral rays 5; ventral rays 7.

Length 60 mm. without caudal.

(Regan and Trewavas.)

Atlantic, Caribbean Sea.

Melanostomias melanops BrauerMelanostomias melanops Brauer, Zool.

Anzeiger, vol. 25, no. 668, 1902, p. 284.

West coast of Sumatra, in 1024 meters;

Deutsch. Tiefsee Exped. Valdivia, vol. 15,

Tiefsee - Fische, 1906, p. 53, text fig. 15,

pl. 3, figs. 4-5 (h. Lat. $5^{\circ}23'2''$ E. Long. 94° $48'1''$ in 1024 meters). — Weber and Beaufort,

Fishes Indo Austral. Archipelago, vol. 2,

1913, p. 114, fig. 41 (copied). — Parr, Bull.

Bingham Oceanogr. Collection, vol. 3, art.

2, December 30, 1927, p. 42 (not figure

or materials; reference). — Regan andTrewavas, Danish Dana Exped. Oceanogr.

Rep., no. 6, March 10, 1930, p. 114, fig. 110 b

(end of barbel) (Caribbean near Martinique ¹³⁰¹
N. $14^{\circ}38'$ W. $61^{\circ}16'$, 1000 meters).

Depth $7\frac{2}{5}$ to $8\frac{7}{8}$; head $6\frac{1}{3}$ to $6\frac{2}{5}$, width 2 to $2\frac{1}{8}$. Snout $4\frac{1}{4}$ to $4\frac{2}{5}$ in head from snout tip; eye $5\frac{3}{4}$ to $6\frac{1}{2}$, $1\frac{3}{5}$ in snout, 2 in interorbital; maxillary reaches preopercle ridge, length $1\frac{1}{10}$ to $1\frac{1}{8}$ in head from snout tip; interorbital $2\frac{3}{4}$ to 3, convex.

Gill rakers at about 12 rather irregular, short, minute spines on lower branch of first arch.

barbel 2 to $2\frac{1}{10}$ times head length, reaches $1\frac{9}{10}$ to $2\frac{2}{5}$ to ventrals; terminally expanded and compressed, with elongate subterminal dark or brown body, also smaller

↑ whitish body, ovoid, from which slender terminal filament arises;

Luminous organ on cheek along upper maxillary edge and below and behind eye $1\frac{1}{2}$ to 2 times eye diameter; conspicuous photophore about center of preopercle flange; upper laterals between pectoral ventral 27, between ventral and anal 10 or 11 and 2 or 3 more continued back above front of anal base; lower laterals 38 to ventral, of which 8 from middle of isthmus and 2 before pectoral origin; 9

from ventral to anal origin, 14
from anal origin to caudal base.

D. 14 or 15, fin height $2\frac{3}{5}$ ^{to 3} in total
head length; A. 19, fin height
3 to $3\frac{7}{8}$; caudal 2 to $2\frac{1}{2}$, forked,
lobes pointed; least depth of
caudal peduncle 1 to $1\frac{1}{4}$ in eye;
pectoral $2\frac{1}{3}$ to $2\frac{2}{5}$ in total head
length; ventral $1\frac{1}{8}$.

Dark brown, nearly uniform.
Iris gray. Fins all pale or whitish.
Indian Ocean, Caribbean Sea.

Well figured by Brauer though
both of my examples with shorter
barbels. He also shows the lower

caudal lobe larger and larger.
Though in both my examples the
ends of the caudal lobes are broken
off they do show the bases of the
lower caudal rays much stronger
or larger than the upper.

2632. D. 5502. Macabalan Point Light
(Mindanao), S. 35° E., 8.2 miles (N. $8^{\circ} 37'$
 $37''$ E. $124^{\circ} 35'$), vicinity northern Mindanao.
In 214 fathoms. August 4, 1909. Length 245
mm.

2100. D. 5227. Point Orizon, S. 44° E.,
18.30 miles (N. $12^{\circ} 53' 45''$ E. $121^{\circ} 52' 30''$),
east of Mindoro. In 322 fathoms. May 5,
1908. Length 195 mm.

Melanostomias margaritifer Regan and Trewavas

Melanostomias margaritifer Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 115, fig. 110a (end of barbel).

N. $20^{\circ}50'$ W. $66^{\circ}30'$, 200 meters; Caribbean Sea
west of Jamaica N. $18^{\circ}22'$ W. $78^{\circ}38'$, 300 meters.

Depth nearly 10; head $6\frac{1}{2}$ to $7\frac{1}{4}$.
Eye $5\frac{1}{2}$ in head; barbel 2 to $2\frac{1}{4}$ length
off head, unpigmented except at base,
few dots on posterior side, minute
spot at tip of axis; terminally small
compressed translucent expansion
anteriorly and broad one posteriorly,
including basally large white oval
body bending axis forward; no filament.

Postorbital luminous organ long
as eye. Lateral photophores 27 between
gill opening and ventral, 13 between
ventral and anal. Ventral series
 $8+2$ between isthmus and pectoral,
27 or 28 between pectoral and ventral,
13 or 14 between ventral and anal,

10 between anal and caudal.

1307

D. 15 or 16; A. 18; pectoral rays
5; ventral rays 7.

Length 80 mm. without caudal.

(Regan and Trewavas.)

Western Atlantic, Caribbean Sea.

Melanostomias melanopogon Regan and Trewavas

Melanostomias melanopogon Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 115, fig. 111a (end of barbel).

N. $27^{\circ}28'W$. $59^{\circ}29'$, 300 meters; N. $24^{\circ}5'W$. 74°

$36'$, 1200 to 1500 meters; N. $21^{\circ}47'W$. $47^{\circ}11'$, 110
meters.

? Melanostomias melanops (not Brauer)

Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, p. 42 (N. $25^{\circ}56'$

W. $77^{\circ}37'$, 5000 feet).

Depth 9 to 10; head $6\frac{2}{3}$ to $7\frac{1}{2}$. Eye
6 to 7 in head; barbel $1\frac{2}{3}$, terminal
half swollen, ending in translucent
compressed expansion containing large
ovate white bulb curving axis and
prolonged in thread right up to bulb,
except for white spot near basal end

of swollen part; pigment spots near end of axis and round thread from bulb; young with basal part of stem black, swollen part lightly pigmented.

Postocular luminous organ long as eye. Lateral photophores 26 to 28 between gill opening and ventral, 12 to 14 between ventral and anal. Ventral series 8 + 2 or 3 between isthmus and pectoral, 27 between pectoral and ventral, 13 or 14 between ventral and anal, 9 or 10 between anal and caudal.

D. 14; A. 17 to 19; pectoral rays 4 or 5; ventral 7.

Length 153 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Melanostomias macrophotus Regan and Trewavas ¹³¹⁰

Melanostomias macrophotus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,

March 10, 1930, p. 115, fig. 111 b (end of barbel).

Caribbean Sea south of Virgin Islands N. 17°

$55'W. 64^{\circ}48'$, 400 meters; N. $10^{\circ}24'W. 54^{\circ}38'$,

100 meters; off Dominica N. $15^{\circ}8'W. 61^{\circ}31'$,

300 to 800 meters; west of Jamaica N. $18^{\circ}22'$

$W. 78^{\circ}38'$, 100 meters; near St. Croix N. $17^{\circ}43'$

$W. 64^{\circ}56'$, ^{100 to} 500 meters.

Depth 10; head 7. Eye 6 in head;
barbel $1\frac{2}{3}$ to $1\frac{5}{6}$ in head, item black
except short white ring about middle
of length; beyond with narrow anterior
and posterior translucent expansions
far as large yellowish oval bulb, beyond
which short, flat, black expansion; axis
covered by bulb, ending in black spot;
minute luminous body between terminal

part of bulb and axis.

1311

Postocular luminous organ little less than eye. Lateral series of photophores 26 or 27 between gill opening and ventral, 13 between ventral and anal. Ventral series 8+2 between isthmus and pectoral, 27 or 28 between pectoral and ventral, 13 or 14 between ventral and anal, 9 or 10 between anal and caudal.

D. 14; A. 18; pectoral rays 5 or 6; ventral rays 7.

Length 82 mm. without caudal.

(Regan and Trewavas.)

Western Atlantic, Caribbean Sea.

Melanostomias barton-beani (Parr) 1312
~~meunsi~~ ~~new species~~

Echiostoma barbatum (not Lowe) Goode
and Bean, Oceanic Ichthyology, 1895,
p. 109, (not figure) (No. 22364 U.S.N.
M.).

2 spines

maxillary extends $2\frac{1}{2}$ eye diameters
behind eye length but slightly less
than head tip; premaxillary
teeth 8, second, fourth, fifth and
eighth longest; 5 smaller teeth on
each maxillary graduated longer to
posterior; 11 or 12 teeth on each
mandibular ramus, fourth, eighth
and last 2 longest; rather long
depressible tooth each side of vomer;

Melanostomias Bartonbeani [PARR]
Type
22364 U.S.N.M.
Description in:
Bull. Bingham Oceanogr.
Coll. Vol. III. Art. 2.
1927.

Melanostomias Bartonbeani [PARR]

Type

Description in:
Bull. Bingham Oceanogr.

22364 U.S.N.M. Coll. Vol. III. Art. 2.
1927.

Melanostomias barton-beani (Parr) 1312
~~meunieri~~ ~~new species~~

Echiostoma barbatum (not Lowe) Goode
and Bean, Oceanic Ichthyology, 1895,
p. 109, (not figure) (No. 22364 U.S.N.
M.).

2 specimens

maxillary extends $2\frac{1}{2}$ eye diameters
behind eye, length but slightly less
than head from snout tip; premaxillary
teeth 8, second, fourth, fifth and
eighth longest; 5 smaller teeth on
each maxillary graduated longer to
posterior; 11 or 12 teeth on each
mandibular ramus, fourth, eighth
and last 2 longest; rather long
depressible tooth each side of vomer;

Melanostomias ^{barton-beani (Parr)} ~~meunsi~~ ^{new species} 1312

Depth $7\frac{2}{3}$; head $6\frac{2}{5}$, width 2.

Snout 5 in head from upper jaw tip; eye $4\frac{3}{4}$, slightly greater than snout, $1\frac{2}{5}$ in interorbital;

maxillary extends $2\frac{1}{2}$ eye diameters behind eye, length but slightly less than head from snout tip; premaxillary teeth 8, second, fourth, fifth and eighth longest; 5 smaller teeth on each maxillary graduated longer to posterior; 11 or 12 teeth on each mandibular ramus, fourth, eighth and last 2 longest; rather long depressible tooth each side of vomer;

1313

6 teeth on left and 7 on right
palatine; 2 pairs of recurved
teeth on tongue; barbel $1\frac{1}{3}$ in
total head length, slender, tapers
into narrow filament; interorbital
 $4\frac{1}{4}$ in head from snout tip, low,
depressed medially. Gill rakers
as 10 small clusters of several very
small spinules; gill filaments
slightly greater than eye.

Rather large triangular luminous
body, close along maxillary above and
below eye posteriorly, long as eye;
small photophore close to middle
of lower eye edge; lateral series

of photophores 21 between pectoral and ventral, 10 between ventral and anal, 14 between front of anal and caudal; lower or ventral series 9 on isthmus, then 21 to ventrals, 10 between ventral and anal, and 2 along front anal base.

D. 13, fin height $4\frac{2}{5}$ in total head; A. 18, fin height 4; fin origin opposite dorsal origin; caudal 2, damaged, apparently forked?; least depth of caudal peduncle $1\frac{1}{3}$ in eye; pectoral rays 5, very filamentous, $2\frac{1}{5}$ in total head length; ventral $2\frac{3}{5}$;

rays 8, fin origin same distance before anal origin latter is before caudal base.

Brown, most all lower surface blackish brown. Iris neutral slate. Luminous organ above maxillary pale brownish white. Fin rays all whitish.

Diagnosis. Distinguished by its short simple barbel, apparently without any white luminous bodies. It further differs from most species in the posterior insertion of the ventrals.

Type - no. 22364 U. S. N. M.

N. 44°

W. 52°

1316

Schooner Seth Stockbridge.

Length 221 mm. As Echiostoma
barbatum.

(For Dr. Edgar Mearns,
an ardent naturalist and student
of Philippine zoology, who collected
fishes for the U. S. National Museum.)

Melanostomias niger Gilchrist and Von Bonde

Melanostomias niger Gilchrist and Von

Bonde, Fisher. Marine Biolog. Surv.

South Africa, Report no. 3, 1922 (1924),

no. 7, p. 6, pl. 2, fig. 2. Off Table Bay, in

135 fathoms. — Barnard, Ann. South African

Mus., vol. 21, pt. 1, June 1925, p. 142 (type).

— Parr, Bull. Bingham Oceanogr. Coll-

ection, vol. 3, art. 2, December 30, 1927, p.

42 (compiled). — Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 111 (compiled).

Depth 7; head 7. Eye 6 in head;
barbel 2, slender, ending in white
ovate bulb with rounded end.

Postocular luminous organ equals

1318
eye. Lateral series of photophores
27 between gill opening and ventral,
13 between ventral and anal. Ventral
series 63 between isthmus and caudal.

D. 10; A. 17; pectoral rays 5;
ventral rays 7.

Length 220 mm.

(Regan and Trewavas.)

South Africa.

Melanostomias vierecki new species

Depth $8\frac{3}{4}$; head $6\frac{2}{3}$, width $2\frac{1}{3}$.
Snout 5 in head from snout tip;
eye 5, little greater than snout seen
in profile, $1\frac{2}{3}$ in interorbital;
maxillary extends 3 eye diameters
behind eye, length $1\frac{1}{8}$ in head from
snout tip; 9 teeth on each premaxillary,
with third and sixth pairs longest;
4 moderate teeth at front of maxillary,
graduated to posterior; 10 teeth
in each mandibular ramus, with
third and fifth left, fourth and
sixth right, largest; 2 depressible
vomarine and 3 or 4 palatine teeth;

3 pairs of small recurved teeth on tongue; barbel $1\frac{2}{5}$ in head, ends in 3 bulbs of which terminal largest and with small ^{short} filament extended around one side from more advanced of 2 small subterminal bulbs; interorbital $3\frac{1}{2}$, low, depressed medially. Gill rakers as $3 + 7$ short weak spinules, sometimes double; gill filaments equal eye.

Slender triangular luminous body close above maxillary from below lower ~~hind~~ hind eye edge, long as eye; small photophore at middle of lower eye edge; 1 on

middle of opercle; lateral photophores 25 between pectoral and ventral fins, 9 between ventrals and anal and 3 above front of anal; lower or ventral series 8 on isthmus, then 28 to ventrals, 9 between ventrals and anal, 13 from front of anal to caudal.

D. 15, fin height 2 in total head length; A. 17, fin height 2; caudal $1\frac{3}{4}$, well forked, slender lobes pointed; P. with 4 rays, length $2\frac{2}{5}$ in total head length; ventral 1, reaches little beyond front of anal; least depth of

caudal peduncle equals eye.

Blackish generally. Mouth and luminous body below eye posteriorly whitish. Iris neutral dusky. Barbel dusky, terminates with bulbs and filament white.

Diagnosis. Differs from all the known species in its slightly different arrangement of the terminal bulbs of the short barbel, in combination with the dentition, photophores and fin formulae, especially the pectorals which have only 4 rays, while in most species 5 or 6.

Type - No.

U. S. N. M. ¹³²³

D. 5215. Palanog Light, S. $5^{\circ}30'$
E., 8.50 miles (N. $12^{\circ}31'30''$ E. $123^{\circ}35'$
^{35'}
 $24''$), east of Masbate. In 604 fathoms.
April 21, 1908. Length 118 mm.

To the late Henry L. Verrill,
an earnest student of the Hymenoptera,
to whom I am indebted for collections
of fishes.

1324

Genus Echiostoma Lowe

Echiostoma Lowe, Proc. Zool. Soc. London,
vol. 2, 1843, p. 87. Type Echiostoma
barbatum Lowe, monotypic.

Hyperchoristus Gill, Proc. U. S. Nat. Mus.,
vol. 6, 1883 (1884), p. 256. Type

Hyperchoristus tanneri Gill, monotypic.

Lower teeth in 2 or 3 series
posteriorly. Terminal part of stem of
barbel with age bearing a double
row of papilliform or filamentous
points. Pectoral rays 4, first isolated
and produced. Ventral rays 8.

Analysis of species

a. Echiostoma. Barbel without or with single bulb.

b. Barbel with bulb not thicker than stem, bearing simple flat terminal appendage and filaments on stem rather short; postocular luminous organ 5 in head. barbatum.

b.² Barbel with distinct bulb and simple slender terminal appendage and filaments on stem long; postocular luminous organ 4 in head. guentheri.

b.³ Barbel without bulb, with slender tapering appendage bearing 2 filaments and 2 filaments on stem short and fleshy; postocular luminous organ nearly 3 in head. ctenobarba.

a.² Hyperchoristius. Barbel with 2 white
bulbs, longer basal and shorter
terminal bearing terminal filaments.
tanneri.

Echiosstoma barbatum Lowe

Echiosstoma barbatum Lowe, Proc. Zool.
Soc. London, vol. 2, 1843, p. 88. Madeira.

— Günther, Cat. Fishes Brit. Mus., vol. 5,
1864, p. 427 (reference; not material);

Rep. Voy. Challenger, vol. 22, 1887, p. 206

(reference; not material). — Jordan and

Gilbert, Bull. U. S. Nat. Mus., no. 16, 1882,

p. 287 (reference; part). — Goode and

Bean, Oceanic Ichth., 1895, p. 109 (reference;

not figure or materials). — Jordan and

Evermann, Bull. U. S. Nat. Mus., no. 47, pt.

1, 1896, p. 586 (part). — Pappenheim,

Deutsche Südpolar Exped., vol. 15, pt. 2,

March 1914, p. 172 (north west of Cape Verde

Islands N. $20^{\circ}41'$ W. $31^{\circ}53'$, 3000 feet).

— Regan and Trewavas, Danish Dana
Exped. Oceanogr. Rep., no. 6, March 10, 1930,
p. 116, fig. 112 a (type).

Depth $7\frac{2}{3}$; head 7. Snout $5\frac{3}{4}$ in head; eye $5\frac{3}{4}$, 1 in snout; maxillary extends $2\frac{3}{4}$ eye diameters behind eye, length $1\frac{1}{8}$ in head; maxillary with 6 fangs and 38 small oblique teeth; pair of teeth on vomer and series of 9 on each palatine; barbel $1\frac{2}{5}$ in head, rather elongate bulb not thicker than stem, flat and somewhat tapering terminal appendage and double series of 8 fleshy filaments immediately below bulb; interorbital low.

Postocular luminous organ 5 in head. Lateral photophores 25 between gill opening and ventral, 17 between ventral and anal; ventral series $8 + 2$ between isthmus and pectorals; 26 between pectoral and ventral, 17 between ventral and anal, 11 between anal and caudal.

D. 13, fin height $3\frac{1}{5}$ in head; A. 16, fin height $2\frac{3}{5}$; caudal $1\frac{3}{4}$, forked, lower lobe longer; least depth of caudal peduncle 6; pectoral rays 1 + 3, $3\frac{1}{4}$ in body without caudal; ventral equals head, rays 8.

Length 285 mm. without caudal.

(Regan and Trewavas.)

Eastern Atlantic.

Echiostoma guentheri Regan and Trewavas
Echiostoma guentheri Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 117. Madeira.

Echiostoma barbatum (not Lowe) Günther,
 Cat. Fishes Brit. Mus., vol. 5, 1864, p. 427
 (Madeira); Rep. Voy. Challenger, vol. 22, 1887,
 p. 206, pl. 53, fig. B (Madeira specimen).

Depth 9; head $6\frac{1}{2}$, width $1\frac{4}{5}$.
 Snout 5 in head from snout tip;
 eye $5\frac{1}{4}$, subequal with snout, equals
 interorbital; maxillary extends $2\frac{1}{2}$
 eye diameters behind eye, length $1\frac{1}{10}$
 in head; ^{pre}maxillary with 6 fangs
 followed by 22 small oblique teeth on
 maxillary; pair of teeth on vomer;
 series of 8 teeth on each palatine;
 barbel 2 in head, pigmented throughout,
 with slightly swollen bulb and slender
 tapering terminal appendage with

1331

double series of 7 long tapering filaments on stem below bulb; interorbital $4\frac{1}{2}$ in head, low.

Postocular luminous organ 4 in head. Lateral photophores 25 between gill opening and ventral, 17 between ventral and anal; ventral series $8+2$ between isthmus and pectoral, 26 between pectoral and ventral, 17 between ventral and anal, 11 between anal and caudal.

D. 14, fin height $2\frac{1}{2}$ in total head length; A. 17, fin height $3\frac{1}{3}$; caudal 2, forked; least depth of caudal peduncle 5; pectoral $1+3$, length $2\frac{2}{3}$ in body without caudal; ventral equals head, rays 8.

Length 215 mm. total.

(Günther, Regan and Trewavas.)

Madaira.

Echiostoma ctenobarba Parr

Echiostoma ctenobarba Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,
p. 55, figs. 32 and 33 (end of barbel). N.
23°55' W. 77°9', 4000 to 7000 feet. — Regan
and Trewavas, Danish Dana Exped.
Oceanogr. Rep., no. 6, March 10, 1930, p. 117
(compiled).

Depth $6\frac{1}{5}$; head $6\frac{3}{4}$. Snout $4\frac{1}{5}$
in head; eye 6, $1\frac{1}{4}$ in snout;
maxillary extends 2 eye diameters
behind eye, length $1\frac{1}{6}$ in head; 9
rather small fangs in each premaxillary,
5 normal erect teeth in each maxillary
followed by minute oblique denticles;
8 fangs in each limb of lower jaw,
followed by series of 12 pairs of very
small teeth; pair of fangs on vomer;
series of 12 to 15 teeth on each palatine;
barbel $1\frac{3}{4}$ in head, tapering and slender

terminally with pair of filaments
with swollen ends, basally ^{from these} stem
with 10 pairs of short fleshy filaments
interorbital low.

Postocular luminous organ nearly
twice eye diameter or $2\frac{1}{4}$ in head.
Lateral photophores 25 between gill
opening and ventral, 17 between
ventral and anal, 12 between anal
and caudal; ventral series 8 + 2 between
isthmus and pectoral, 26 between
pectoral and ventral, 17 between ventral
and anal.

D. 12, fin height 2 in head; A. 14,
fin height $2\frac{3}{4}$; caudal $1\frac{2}{3}$, forked,
lower lobe longer; least depth of
caudal peduncle $4\frac{2}{3}$; pectoral rays
1 + 3, length $2\frac{4}{5}$ in body without
caudal; ventral long as head, rays 8.

Length 285 mm. without caudal. (Parr.)

Atlantic.

Echiostoma tanneri (Gill)Hyperchroustus tanneri Gill, Proc. U.S. Nat. Mus., vol. 6, 1883⁽¹⁸⁸⁴⁾, p. 256. N. 40° 26'

40" W. 66° 58', 956 fathoms.

Echiostoma tanneri Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 117, fig. 113 (ends of barbels)

(south east of Bermuda; north east of Lesser

Antilles; mid Atlantic; west of Cape

Verde Islands; west of St. Lucia; west

of Jamaica; south of Cuba; north west

of Cuba; between Florida and Cuba;

between Haiti and Cuba; near St. Croix;

east of Cape Hatteras; north of Bermuda;

50 to 2000 meters). — Horman, Discovery

See p. 1335-

(Echiostoma barbatum (not Lowe) Goode
and Bean, Bull. Essex Inst., 1879, p.
23.

— Jordan and Gilbert, Bull. U. S. Nat. Mus.,
no. 16, 1882, p. 287 (part). — Goode and

Bean, Oceanic Ichth., 1895, p. 109, pl. 35,

fig. 130 (old Bahama Channel, 500 fathoms;

N. $39^{\circ}11'W$. $72^{\circ}8'$, 636 fathoms; type of

Hyperchoristus tanneri). — Parr, Bull.

Bingham Oceanogr. Collection, vol. 3, art. 2,

Dec. 30, 1927, p. 53, fig. 31 (end of barbel)

(N. $24^{\circ}29'W$. $77^{\circ}29'$, 8000 feet; N. $24^{\circ}11'W$.

$75^{\circ}37'$, 800 feet; type of Hyperchorist⁴⁰⁵~~is~~

tanneri).

Insert on p. 1334.

Rep., vol. 2, 1930, p. 314 (S. $33^{\circ}50'$ to $34^{\circ}13'E$, $16^{\circ}4'$ to $15^{\circ}49'$, 850 to 950 meters).

Depth $6\frac{1}{2}$ to 8; head $5\frac{3}{4}$ to $5\frac{4}{5}$, width $2\frac{1}{8}$ to $2\frac{1}{4}$. Snout $3\frac{3}{4}$ to 4 in head from snout tip; eye $4\frac{3}{4}$ to $4\frac{4}{5}$, $1\frac{1}{4}$ to $1\frac{3}{5}$ in snout, 2 in interorbital; maxillary extends 2 to $2\frac{1}{2}$ eye diameters behind eye, length $1\frac{1}{10}$ to $1\frac{1}{8}$ in head; upper teeth with 3 pairs of large fangs, lower with 2 of which first large pair largest of all teeth; barbel inserted before eye, reaches back to hind edge of gill opening; subterminal bulb large as pupil

and terminal bulb much shorter,
with 4 very short terminal filaments;
interorbital $2\frac{3}{4}$ to 3 in head from
snout tip, broadly convex though depressed
widely medially. Gill rakers 10
inconspicuous clusters of 2 or 3 very
minute spinules on lower branch of
first arch; gill filaments equal eye.

Small, narrow, pale luminous
body, long as eye close above upper
maxillary edge and behind eye;
small photophore at lower eye edge;
1 opercular, low. Upper lateral
series of photophores 25 or 26 between
gill opening and ventral, 16 between

ventral and anal, 14 between anal origin and caudal base; lower or ventral series 8 on isthmus, then 28 or 29 to ventral, 15 between ventral and anal and 2 above front of anal.

D. 12 to 15, fin height $2\frac{1}{8}$ to $2\frac{1}{2}$ in total head length; A. 17 or 18, fin height $3\frac{1}{8}$ to $3\frac{1}{5}$; caudal $1\frac{3}{5}$, forked, lobes slenderly pointed; ventral $1\frac{2}{3}$ to $1\frac{3}{5}$, rays 8; pectoral with long front ray $4\frac{7}{8}$ to 5 in combined head and body to caudal base, hind group of fin rays 3 and 2 in head; least depth of caudal peduncle equals eye.

Blackish brown. Iris grayish.
Barbel pale or brownish white.
Fins whitish.

Atlantic.

33444 U.S.N.M. N. $40^{\circ}26'40''$ W. 66°

58'. In 956 fathoms. Albatross Station

2083. Length 100 mm. Type of Hyperch-
istus tanneri.

35624 U.S.N.M. N. $39^{\circ}11'00''$ W. $72^{\circ}08'30''$

Albatross Station. Length 123 mm.

47617 U.S.N.M. Old Bahama Channel.
Blake Station CXXV. In 500 fathoms.
Length 35 mm. It has the short barbel
with the large subterminal bulb and
a small terminal bulb. Specimen
hardly sufficient for satisfactory description.

Genus Photoneustes Günther

Photoneustes Günther, Rep. Voy. Challenger,
vol. 22, 1887, p. 212. Type Lucifer

albipennis Döderlein, virtually.

Photoneustes Günther proposed to replace
Lucifer Döderlein.

Lucifer (not J. V. Thompson) Döderlein,
Archiv Naturges., 1882, p. 26. Type

Lucifer albipennis Döderlein,

Trachinostomias Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,
p. 105, ^{106.} Type Echiostoma margarita
Goode and Bean.

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OF PHILADELPHIA

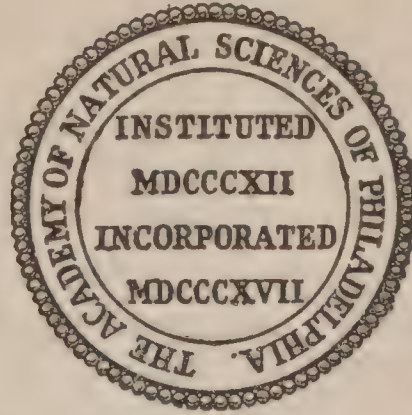
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Holichostomias Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, Dec. 30,
1927, pp. 106, 111. Type Photoneustes
mirabilis Parr.

Melanoneustes Regan and Trewavas, Danish
Dana Exped. Oceanogr. Rep., no. 6, March 10,
1930, pp. 119, 126. Type Photoneustes dinema
Regan and Trewavas.

Microchirochthys Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, pp. 119, 120, 124. Type
Photoneustes parvimanus Regan and Trewavas.

Mouth curved, lower jaw prominent. Teeth smaller and more numerous in lower jaw, in groups of 3 to 5 increasing in length backwards, 2 or 3 pairs of teeth on each of ² first basibranchials. Photophores on isthmus 7 or 8, may be separated from 3 close together & below pectoral by an interspace or may form continuous series from isthmus to ventrals. Dorsal and anal membranes variously thin with conspicuous rays or thick with only tips of rays visible. Pectorals absent or reduced to 1 or 2 rays, sometimes with minute third ray.

1343

Analysis of species

a. Dorsal and anal membranes thin, rays conspicuous; ventral photophores 30 to 37 between isthmus and ventral fin.

b. Melanonectes. Pectoral rays 2, sometimes minute third ray.

c.¹ Barbel with small bulb bearing translucent appendage ending in second bulb, nearly large as first, with pair of short filaments. dinema.

c.² Barbel with rather large bulb bearing slender translucent appendage ending in minute bulb without filaments. leucospilus.

c.³ Barbel with large bulb bearing small ovoid appendage. ovibarba.

c.⁴ Barbel with small bulb bearing minute knob. braueri.

1344

b.² Photoneustes no pectoral fins.

d.¹ Photoneustes. Depth 6 to 9; dorsal and anal fin relatively short; ventrals much nearer caudal than head.

e.¹ Barbel shorter than head; stem black, bulb half black and half white, terminal part slender, translucent, white swelling at tip. achirus.

e.² Barbel shorter than head; no bulb, stem black, terminally slender, translucent, with white tip. caeruleus.

e.³ Barbel shorter than head; stem black, short, large bulb white, terminal appendage with stalk and translucent leaf like expansion. phylloporon.

e.⁴ Barbel long as head; stem short, black, bulb white,

long terminal part tapering,¹³⁴⁵
with luminous bodies, terminal
translucent expansion with minute
white body. mirabilis.

e.⁵ Barbel longer than head; stem
tapering, small white bulb with
terminal filament. albipennis.

d.² Dolichostomias. Depth $10\frac{1}{2}$ or more
in length; dorsal and anal fins
long and low; ventral nearer head
than caudal. gracilis.

a.² Dorsal and anal membranes thick,
black; only tips of rays visible with
age; ventral photophores 42 to 48
between isthmus and ventral.

f.¹ Microchirichthys. Two minute
pectoral rays.

g.¹ Barbel with spherical bulb,
much less than $\frac{1}{2}$ stem;
lateral photophores 34 to 36
between gill opening and

ventral, ventral^{series} 36 to 38 1346
between pectoral and ventral.
parvimanus.

g.² Barbel with oval bulb $\frac{1}{2}$
stem; lateral photophores 30
between gill opening and
ventral, ventral series 32 to
34 between pectoral and ventral.
fimbria.

f.² Trachinostomias. One long
pectoral ray (? P. margarita),
sometimes minute second ray
in young.

h.¹ Barbel with stout unbranched
black stem, broad compressed
truncated white bulb bearing
filaments. intermedius.

h.² Barbel without bulb or
bulb scarcely thicker than
black stem, terminal part
bearing several long tapering
pigmented branches.

median 1347

i.¹ Barbel with oblong, bulb, slightly thicker than stem, branches on bulb and terminally. richardi.

i.² Barbel with small bulb not thicker than stem at $\frac{4}{5}$ its length, another at end, branched between. margarita.

i.³ Barbel without bulb; terminal filament, 2 pairs of long branches near base of filament, basally close together anteriorly 1 or 2 unpaired terminal and 1 or 2 pairs of basal branches. monodactylus.

i.⁴ Barbel without bulb; terminal filament, $1\frac{1}{2}$ or 2 pairs of lateral branches little removed and anteriorly in same region series of 4 pairs of branches. flagellatus.

1348

Photoneustes dinema Regan and Trewavas

Photoneustes dinema Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 120, fig. 114 (outline) 115-b
(end of barbel). N. $29^{\circ}15'$ W. $59^{\circ}45'$; N. $33^{\circ}18'$
W. $56^{\circ}3'$; N. $25^{\circ}11'$ W. $20^{\circ}57'$; N. $27^{\circ}2'$ W. $53^{\circ}59'$;
N. $27^{\circ}34'$ W. $51^{\circ}47'$; N. $26^{\circ}37'$ W. $54^{\circ}45'$; N. $27^{\circ}28'$
W. $59^{\circ}29'$; N. $35^{\circ}51'$ W. $66^{\circ}43'$; N. $29^{\circ}56'$ W. $59^{\circ}33'$;
150 to 5000 meters.

Depth 7 to 9; head 6 to 7. Eye 5 to 6 in head; maxillary with 1 to 4 erect and 4 to 8 oblique teeth; 2 pairs of teeth on vomer; 1 to 3 teeth ^{each} on palatine; barbel $\frac{2}{3}$ of head, stem pigmented, white bulb scarcely thicker than stem, with long translucent appendage; end with somewhat smaller bulb bearing pair of short filaments.

Postocular luminous organ $\frac{2}{3}$ of

eye. Lateral series of photophores 17 to 20 between gill opening and ventral, 14 to 17 between ventral and anal. Ventral series 7 or 8 + 2 between isthmus and pectoral, 20 between pectoral and ventral, 14 to 18 between ventral and anal, 11 or 12 between anal and caudal. Median white spot on snout.

D. 15 to 18; A. 18 to 21; pectoral of 2 short rays and sometimes minute third ray; ventral rays 7.

Length 38 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Photoneustes leucospilus Regan and Trewavas

Photoneustes leucospilus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 121, fig. 115a (end of barbel).

N. $14^{\circ}52'$ W. $28^{\circ}4'$, 300 meters; N. $28^{\circ}15'$ W.

56° , 2000 meters.

Depth 8 to 9; head 7. Diameter 6 in head; maxillary 0 to 3 erect and 5 or 6 oblique teeth; 12 pairs of teeth on vomer and 2 teeth on each palatine; barbel $\frac{1}{2}$ to $\frac{2}{3}$ length of head, stem black, large oval white bulb bearing rather long and slender translucent appendage with very small white bulb at end.

Postocular luminous organ $\frac{1}{2}$ to $\frac{2}{3}$ long as eye. Lateral photophores 21 or 22 between gill opening and ventral, 14 between ventral and anal. Ventral series 8 + 2 between isthmus and pectoral, 23 between pectoral and ventral, 14 or 15 between ventral and anal, 10 or 11 between anal and caudal.

D. 16; A. 20; pectoral 2 short rays, sometimes minute third ray; ventral rays 7.

White median spot on snout.

Length 50 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Photomestes vibarba Regan and Trewavas

Photomestes vibarba Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,
March 10, 1930, p. 121, fig. 115c (end of barbel).

N. $24^{\circ}34'$ W. $28^{\circ}4'$; N. $23^{\circ}40'$ W. $43^{\circ}26'$; off

Madeira N. $33^{\circ}26'$ W. $16^{\circ}59'$; N. $32^{\circ}55'$ W. $21^{\circ}51'$;

N. $30^{\circ}17'$ W. $20^{\circ}44'$; N. $24^{\circ}5'$ W. $74^{\circ}36'$; N. $27^{\circ}2'$ W.

$53^{\circ}39'$; N. $28^{\circ}15'$ W. 56° ; 100 to 4000 meters

Depth 6 to 9; head 6 to 7. Eye 5 to 6 in head; maxillary with 1 or 2 erect and 3 to 6 oblique teeth; 2 pairs of teeth on vomer and 1 or 2 on each palatine; barbel $\frac{1}{2}$ of head, with short stout black stem and large white bulb, broadly rounded at end, bearing small ovoid terminal appendage.

Postocular luminous organ long as or shorter than eye. Lateral photophores 21 to 23 between gill opening and ventral,

12 to 14 between ventral and anal.
Ventral series 7 or 8 + 2 between
isthmus and pectoral, 21 to 23 between
pectoral and ventral, 14 or 15 between
ventral and anal, 11 or 12 between
anal and caudal.

D. 15 to 17; A. 17 to 21; pectoral
with 2 short rays; ventral rays 7.

Length 31 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Photnectes braueri (Zugmayer)

Melanostomias braueri Zugmayer, Bull.
Inst. Océanogr. Monaco, No. 253, 1913, p.

3.

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1927, p. 42 (compiled).

Photnectes braueri Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., No. 6,
March 10, 1930, p. 121, pl. 12, fig. 1, text fig.
115 d (end of barbel) (type).

Depth 8; head $7\frac{2}{3}$. Eye $4\frac{1}{3}$ in
head; maxillary with 9 erect and 10
oblique teeth; 20 pairs of teeth on vomer;
3 teeth on ^{each} palatine; barbel $\frac{1}{5}$ of head,
with stout black stem and small
white bulb, not thicker than stem,
bearing minute terminal knob.

Postocular luminous organ equals

eye. Lateral photophores 20 between gill opening and ventral, 14 between ventral and anal. Ventral series 8 + 2 between isthmus and pectoral, 22 between pectoral and ventral, 15^{between} ventral and anal, 10 between anal and caudal.

D. 18; A. 20; pectoral with 2 short rays; ventral rays 7.

Length 115 mm. without caudal.

(Regan and Trewavas.)

Eastern Atlantic.

Photoneustes achirus Regan and Trewavas

Photoneustes achirus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 122, fig. 116a (end of barbel).

N. $20^{\circ}26'$ W. $61^{\circ}3'$; east of Barbuda N. $17^{\circ}41'$

W. $60^{\circ}58'$; Caribbean Sea near Martinique

N. $14^{\circ}38'$ W. $61^{\circ}16'$; 150 to 1000 meters.

Depth 6 to $8\frac{1}{2}$; head 6 to $6\frac{1}{2}$. Eye 5 to 6 in head; maxillary with 5 or 6 erect and 7 or 8 oblique teeth; 2 pairs of teeth on vomer and 1 to 3 on each palatine; barbel $\frac{1}{2}$ to $\frac{2}{3}$ of head, stem pigmented, bulb black basally and white terminally, long slender translucent terminal appendage with small white swelling at tip.

Postocular luminous organ long as eye. Lateral series of photophores 19 to 21 between gill opening and ventral, 11 or 12 between ventral and anal. Ventral series 31 to 34 between isthmus and ventral, 12 to 13 between ventral and anal, 9 to 11

1357

between anal and caudal. Blue luminous
tissue as in Photoneustes caeruleus.

D. 15 to 17; A. 18 or 19; no pectoral;
ventral rays 7.

Length 62 mm. without caudal.

(Regan and Trewavas.)

Western Atlantic, Caribbean Sea.

Photoneustes caeruleus Regan and Trewavas

Photoneustes caeruleus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 122, pl. 12, fig. 2, text fig.

116-b. Caribbean Sea south of St. Croix N. 17°

13' W. $64^{\circ}58'$, 2000 meters.

Depth 7; head 7. Eye 4 in head; maxillary with 9 erect and 17 oblique teeth; 12 pairs of teeth on vomer; 1 tooth on each palatine; barbel less than $\frac{2}{15}$ of head, stem black, slender translucent terminal part with white tip and no bulb.

Postocular luminous organ $\frac{3}{4}$ of eye. Lateral series of photophores 21 between gill opening and pectoral, 11 between ventral and anal. Ventral photophores 33 between isthmus and ventral, 12 between ventral and anal, 11 between anal and caudal. Luminous blue mid ventral stripe from chest to ventrals giving rise to short transverse

1359
streaks alternating with photophores.
Small patches of blue luminous
tissue on sides of isthmus, under
lower jaw and above end of maxillary.

D. 18; A. 21; no pectoral; ventral
rays 7.

Length 116 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

Photoneustes phylloporon Regan and Trewavas
Photoneustes phylloporon Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 122, fig. 117a (end of barbel).
Caribbean Sea west of St. Lucia N. $13^{\circ}47'$ W.
 $61^{\circ}26'$, 300 meters.

Depth $8\frac{1}{2}$; head 6. Eye 6 in head;
maxillary with 2 or 3 oblique teeth; 2
pairs of teeth on vomer and tooth on
each palatine; barbel $\frac{2}{3}$ of head,
with short black stem and large
rounded white bulb bearing appendage
consisting of pigmented cylindrical
stalk and terminal translucent
leaf like expansion, with serrated edges
and 4 terminal filaments.

Postocular luminous organ small.
Lateral photophores 19 between gill
opening and ventral, 12 between anal
and caudal. Ventral series 30 between
isthmus and ventral, 11 between ventral
and anal, 12 between anal and caudal.

D. 20; A. 22; no pectoral; ventral
rays 7.

Length 21 mm. without caudal.

(Regan and Trewavas.)

Caribbean Sea.

Photoneustes mirabilis Parr

Photoneustes mirabilis Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 111, figs. 59 (end of barbel), ^{60 (detail).} N. $24^{\circ}45'W$. $76^{\circ}21'$, 8000 feet. — Regan and Trevaas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 123, fig. 117.b (end of barbel) (N. $35^{\circ}42'W$. $73^{\circ}43'$, 300 meters).

Depth $6\frac{2}{3}$; head $7\frac{1}{2}$. Eye 4 in head; maxillary with 4 erect and 15 oblique teeth; 2 pairs of teeth on vomer and 2 teeth on each palatine; barbel long as head, short black stem bearing small posterior luminous body, bulb and long tapering terminal part,

Photonectes mirabilis Regan and Trewavas
Photonectes mirabilis Regan and Trewavas

pigmented basally, bearing 3 luminous bodies and ending in flat round translucent expansion with minute white body at tip.

Postocular luminous organ little longer than eye. Lateral photophores 24 between gill opening and ventral. Ventral series 3 ^{to 34} ₁ between isthmus and ventral, 11 between anal and caudal.

D. ^{or 17} 16₁; A. ^{or 20} 19₁; no pectoral; ventral rays 7.

White spot before eye. Three ^{or 2} luminous patches each side of anterior part of mouth floor. Length 60 mm. without caudal. (Regan and Trewavas.)

Atlantic.

Photoneustes albipennis (Döderlein)

Lucifer albipennis Döderlein, Archiv
Naturges., 1882, p. 26. *Inosimus*.

Photoneustes albipennis Günther, Rep.

Voy. Challenger, vol. 22, 1887, p. 212

(compiled). — Goode and Bean, Oceanic

Ichth., 1895, p. 112 (reference). — Parr,

Bull. Bingham Oceanogr. Collection, vol.

3, art. 2, December 30, 1927, p. 114 (compiled).

— Regan and Trevaas, Danish Dana Exped.

Oceanogr. Rep., no. 6, March 10, 1930, p. 123

(type).

Depth $7\frac{1}{4}$ to 8; head $6\frac{1}{2}$ to 7,
width $2\frac{1}{3}$ to 3. Snout $5\frac{1}{2}$ to 6 in
head from snout tip; eye $4\frac{1}{5}$ to $5\frac{1}{5}$.

greater than snout, $1\frac{3}{4}$ to 2 in
interorbital; maxillary extends $2\frac{1}{4}$
to 3 eye diameters behind eye, length
very slightly less than head measured
from snout tip; 8 subequal teeth on
each premaxillary and 28 to 30 on
each maxillary; 29 to 31 on each ramus
of lower jaw; 2 teeth each side of
vomer and 2 on each palatine; barbel
inserted opposite middle of eye;
barbel $4\frac{1}{8}$ to 6 in combined head
and body without caudal; with subtermi-
nal moderate ellipsoid bulb and
variable terminal filament nearly or
quite long as eye; interorbital $2\frac{3}{5}$ to 3,

rather broadly convex. Gill rakers
as 1 + 5 or 6 small groups of very
small spines or denticles, usually 2
in each group; gill filaments $1\frac{1}{3}$ in
eye.

Small photophore at middle of
lower eye edge; rather narrowly triangular
luminous organ behind and below eye
close along upper maxillary edge; 2 close
set white photophores above upper
opercular angle and one level with
lower eye edge at middle of opercle;
lateral photophores 25 to 26 between
gill opening and ventral fin, 23 or 24
between ventral fin and caudal base;

6 branchiostegals; 7 or 8 on isthmus
to hind edge of gill opening, then
lower series 28 to ventral fin, finally
14 till above front of anal fin.

D. 15 or 16, fin height $2\frac{3}{4}$ to $3\frac{1}{4}$
in total head length; A. 16 to 18,
fin height $2\frac{4}{5}$ to $3\frac{1}{4}$; caudal $1\frac{3}{4}$
to 2, deeply forked, lobes small,
slender, sharply pointed; least
depth of caudal peduncle 6 to $6\frac{1}{3}$;
pectoral $1\frac{1}{8}$ to $1\frac{1}{6}$.

Dark blackish brown generally.
Luminous organ below eye posteriorly
cream white. Iris neutral black.
Photophores on body whitish; Fins

all whitish.

Pacific Ocean.

4420, D. 5331. Hermana Mayor
Island (E.), N. 13° E. 7.30 miles (N. $15^{\circ} 36'$
 $45''$ E. $119^{\circ} 47' 45''$), off western Luzon.
In 178 fathoms. November 22, 1908. Length
148 mm.

3834 and 3835, D. 5626. Kayoa
Island (SE.), S. 15° E., 4.5 miles (N. $0^{\circ} 6'$
E. $127^{\circ} 26'$), between Gilolo and Kayoa
Islands. In 265 fathoms. November 29,
1909. Length 182 to 202 mm.

Photoneustes gracilis Goode and Bean

Photoneustes gracilis Goode and Bean, Oceanic Ichth., 1895, p. 112, pl. 36, fig. 137. Off Martinique, in 472 fathoms. — Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 591 (compiled). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 113, fig. 61 (N. $24^{\circ}29'$ W. $77^{\circ}29'$, 8000 feet). — Regan and Trewavas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 123 (compiled).

Depth $14\frac{1}{6}$ ($15\frac{1}{2}$ in description); head 8 ($8\frac{1}{2}$ in description). Snout 9 in head from snout tip; eye $3\frac{7}{8}$ (4 in description), 3 times snout; maxillary

extends 2 eye diameters behind eye, length but slightly less than head; teeth unequal, 3 on each premaxillary, 20 on maxillary, anteriorly and posteriorly 16 serrae; 35 teeth on each ramus of mandible; 3 teeth each side of vomer, graduated longer backward; pair of teeth on each palatine; canine near tip of tongue and 3 posterior; barbel imperfect, very short, inserted before eye. Gill rakers very few, minute, spine like.

Small rounded luminous body close above maxillary and below hind half of eye. Lateral row of photophores

1371

21 from gill opening to ventral, 13 from ventral to anal - and 13 from anal to caudal; ventral row from isthmus to ventral $3\frac{1}{2}$, from ventral to anal 15.

D. 18, low, fin height $3\frac{1}{3}$ in head; A. 21, low, fin height $7\frac{1}{2}$; caudal small; ventral $2\frac{2}{3}$, rays 7; least depth of caudal peduncle $2\frac{1}{3}$ in eye.

Dark brown.

Atlantic Ocean. Parr describes a broad brightly bluish iridescent lateral band extending from behind gill opening to near terminal ends

of middle caudal rays. Similar narrow less prominent band on each side of lower half of tail from above ventral bases to caudal peduncle.

U.S.N.M. Off Martinique.

In 472 fathoms. Blake Station XL.

Length mm. Type.

Photoneustes parvimanus Regan and Trewavas

Photoneustes parvimanus Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., no. 6,
 March 10, 1930, p. 124, figs. 118 (outline) 119-b
 (end of barbel). N. $29^{\circ}15'$ W. $59^{\circ}45'$, 200 meters;
 N. $30^{\circ}53'$ W. $54^{\circ}7'$, 100 to 150 meters; N. $28^{\circ}37'$ W. 39°
 $36'$, 150 meters; N. $31^{\circ}6'$ W. $41^{\circ}45'$, 600 meters;
 N. $28^{\circ}15'$ W. 56° , 1000 meters; N. $31^{\circ}47'$ W. $41^{\circ}41'$,
 3000 meters.

Depth 8 to 10; head 7 to 8. Eye 6 to 7
 in head; maxillary with 2 to 6 erect and
 5 or 6 oblique teeth, 2 pairs of teeth on
 vomer and series of 4 to 6 on each
 palatine; barbel $\frac{1}{2}$ length of head
 to end of bulb which spherical, much

less $\frac{1}{2}$ stem length, bears translucent compressed terminal appendage, which contains network of branching threads, in adult with fringe of filaments along posterior edge, terminates in long filament with 1 or 2 pairs of branches, which like filaments of fringe, may end in luminous swellings.

Postocular luminous organ small, $\frac{1}{3}$ to $\frac{3}{5}$ long as eye. Lateral photophores 34 to 36 between gill opening and ventral, 12 or 13 between ventral and anal. Ventral series 10 between isthmus and pectoral, 36 to 38 between pectoral and ventral, 12 to 14 between ventral and anal, 11 to 13 between anal and caudal.

D. 17 to 19; A. 22 to 24; pectoral of 2 minute rays; ventral rays 7.

Length 55 mm. without caudal.
(Regan and Trewavas.)

Atlantic.

Photoneustes fimbria Regan and Trewavas

Photoneustes fimbria Regan and Trewavas,

Danish Dana Exped. Oceanogr. Rep., No. 6,
p. 125,

March 10, 1930, fig. 119c. N. $32^{\circ}55'$ W. $21^{\circ}51'$,

500 meters.

Depth 9; head 8. Eye 7 in head; maxillary with 7 or 8 erect and 6 to 8 oblique teeth; 2 pairs of teeth on vomer; series of 3 to 5 teeth on each palatine; barbel $\frac{1}{2}$ of head to end of bulb, which large, oval, $\frac{1}{2}$ long as stem, bears compressed translucent terminal appendage tapering to long filament with pair of branches; basal part of appendage with branching threads within and fringe along third edge, basal filament of which enlarged and originates from an opaque body.

Postocular luminous organ $\frac{1}{2}$ long as eye. Lateral series of photophores 30 between gill opening and ventral, 12 between ventral and anal. Ventral

1376

series 10 between isthmus and pectoral,
33 or 34 between pectoral and ventral,
14 between ventral and anal, 12
between anal and caudal. Irregular
luminous patch on shoulder on 1
side divided into an upper and
a lower.

D. 18; A. 23; pectoral of 2 minute
rays; ventral rays 7.

Length 55 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Photonectes intermedius Parr

1377

Photonectes intermedius Parr, Bull.

Bingham Oceanogr. Collection, vol. 3, art. 2,

Dec. 30, 1927, p. 109, figs. 57 (detail) 58

(end of barbel). N. $32^{\circ}24'$ W. $64^{\circ}29'$, 5000 feet;

N. $32^{\circ}24'$ W. $64^{\circ}29'$, 10000 feet. — Regan and

Trewavas, Danish Dana Exped. Oceanogr.

Rep., No. 6, March 10, 1930, p. 125, fig. 120a

(end of barbel) (N. $30^{\circ}43'$ W. $60^{\circ}46'$; east of
Bermuda N. $33^{\circ}24'$ W. $61^{\circ}5'$; N. $31^{\circ}59'$ W. $59^{\circ}52'$;
west of Bermuda N. $33^{\circ}15'$ W. $68^{\circ}20'$; N. 34° W.
 $70^{\circ}1'$; N. $35^{\circ}7'$ W. $72^{\circ}38'$; N. $35^{\circ}51'$ W. $66^{\circ}43'$;
N. $28^{\circ}15'$ W. 56° ; N. $33^{\circ}18'$ W. $56^{\circ}3'$; off Dominica
N. $15^{\circ}8'$ W. $61^{\circ}31'$; between Florida and Cuba
N. $23^{\circ}13'$ W. $82^{\circ}21'$; Florida Strait N. $24^{\circ}30'$
W. 80° ; N. $32^{\circ}14'$ W. $63^{\circ}51'$; N. $21^{\circ}57'$ W. $22^{\circ}58'$;
150 to 2000 meters).

Depth 10 to 11; head 7 to $8\frac{1}{2}$. Eye 6
to $7\frac{1}{2}$ in head; maxillary with 7 to 13

erect and 5 to 7 oblique teeth; 1 or 2 pairs of teeth on vomer and 2 to 5 teeth on each palatine; barbel $\frac{2}{5}$ to $\frac{2}{3}$ length of head, with stout black stem and compressed white bulb, broadest terminally and truncated, generally somewhat obliquely at end; terminally posterior pigmented tentacle like appendage, usually with white tip, with or without branch or pair of filaments or of short club like appendages with anterior pair of 'tentacles' generally shorter than posterior one; sometimes pair of unpigmented filaments basal to base of posterior 'tentacle', generally pair of pigmented filaments at base and another pair at base of anterior pair; edge between 'tentacles' with or without 1 unpigmented and 2 or 3 pigmented filaments.

Postocular luminous organ small. Lateral photophores 31 to 34 between gill opening and ventral, 11 to 14 between ventral and anal. Ventral series

1379

8 to 11 between isthmus and pectoral,
33 to 35 between pectoral and ventral,
12 to 13 between anal and caudal.

D. 16 to 19; A. 18 to 24; pectoral
with 1 long ray when complete with
expansion near end; ventral rays 7.

Length 86 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

1380

Photoneustes richardi (Zugmayer)
Echiostoma richardi Zugmayer, Bull.
Inst. Océanogr. Monaco, no. 253, 1913,
p. 4.

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 3, art. 2, Dec. 30, 1930, p. 52 (reference).

Photoneustes richardi Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,
March 10, 1930, p. 126 (type).

Depth $7\frac{1}{2}$; head $7\frac{3}{4}$. Eye 7 in head;
maxillary with 13 or 14 erect and 12 or 13
oblique teeth; pair of teeth on vomer, 3
or 4 on each palatine; barbel long as
head, black, with unpigmented tip;
at middle of ^{length} oblong bulb little thicker

than stem, bearing terminally pair of branches and median branch; stem beyond bulb with pair of lateral branches basally, long unpaired front branch near middle of length, shorter / nearer end; just basal to last branch small luminous body; all branches pigmented and when complete with white tips.

D. 19; A. 22; pectoral of 1 long ray (only on left side); ventral rays 7.

Length 170 mm. without caudal.

(Regan and Trewavas.)

Eastern Atlantic.

1382

Photoneustes margarita (Goode and Bean)
Echiostoma margarita Goode and Bean,
Oceanic Ichth., 1895, p. 109, pl. 35, fig. 131.

N. $28^{\circ}38'30''$ W. $87^{\circ}2'$, 420 fathoms. —

Jordan and Evermann, Bull. U. S. Nat. Mus.,
no. 47, pt. 1, 1896, p. 589 (copied).

Photoneustes margarita Parr, Bull. Bingham
Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927,
fig. 155 b (end of barbel)
p. 106₁ (type). — Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 126, fig. 121 b (copied),

Depth $7\frac{3}{4}$; head $6\frac{3}{4}$, width $2\frac{1}{2}$.

Snout 6 in head from snout tip; eye
6, subequal with snout in profile,
 $1\frac{2}{3}$ in interorbital; maxillary

1383

extends $3 \frac{2}{3}$ eye diameters behind
hind eye edge, length $1 \frac{1}{8}$ in head;
upper teeth 6 or 7 on each premaxillary,
25 to 28 on each maxillary, 35 to 37
on each mandibular ramus; 1 or 2
teeth each side of vomer; 6 on each
palatine; barbel inserted little
behind eye, length $2 \frac{1}{3}$ in head,
2 subterminal luminous organs
at terminal fifth; interorbital
 $3 \frac{2}{5}$ in head, convex. Gill rakers 7
minute spinules on lower branch of
first arch; gill filaments equal
 $1 \frac{1}{5}$ eye diameters.

Oblong luminous body $1 \frac{1}{2}$ in eye,

close along upper maxillary edge and entirely behind eye. Lateral series of photophores from gill opening to ventral 30, ventral to anal 11 or 12; lower or ventral series on isthmus to ventral 45, ventral to anal 12 with last 2 above anal fin base, anal to caudal?

D. 18?, fin height 2 in total head length; A. 24, fin height $2\frac{4}{5}$; caudal 3?, forked, small; least depth of caudal peduncle $7\frac{2}{3}$; pectoral absent or rudimentary; ventral $1\frac{1}{3}$, rays 7.

Color pale brown. Inside mouth

black. Iris neutral dusky. Barbel black, except short whitish terminal filament. Fins pale. Evidently when fresh color blackish..

Atlantic Ocean.

39292 U.S.N.M. N. 28° 38' 30" W. 87° 02' 00"

Albatross Station 2394.

Length 332 ? mm. Type of Echiostoma
margarita.

Photoneustes monodactylus Regan and Trewavas

Photoneustes monodactylus Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 127, pl. 12, fig. 3, ^{text} fig. 122

(end of barbel). N. $24^{\circ}5'$ W. $74^{\circ}36'$, 4000 meters;

Caribbean Sea off St. Croix N. $17^{\circ}58.5'$ W. $64^{\circ}41'$

and N. $17^{\circ}54'$ W. $64^{\circ}54'$, 1000 meters; N. $25^{\circ}11'$

W. $20^{\circ}57'$; N. $7^{\circ}22'$ W. $46^{\circ}51'$, 600 meters; Gulf of

Mexico north west of Cuba N. $22^{\circ}6'$ W. $84^{\circ}58'$,

600 meters.

Depth 7; head 7. Eye 6 in head;
maxillary with 16 erect and 4 or 5 oblique
teeth; pair of teeth on vomer and series
of 3 to 5 on each palatine; barbel $\frac{1}{2}$
length of head (to end of terminal

1387

filament); terminal end with 2 pairs of branches, longer and stronger than terminal filament, tapering, black, with slightly dilated unpigmented ends; at short space on anterior part of stem 6 similar shorter branches, longer terminal and shorter basal unpaired, shorter terminal and longer basal pairs.

Postocular luminous organ $\frac{3}{4}$ long as eye. Ventral photophores 10 between isthmus and pectoral, 34 between pectoral and ventral, 12 between ventral and anal, 9 between anal and caudal.

D. 18; A. 23; pectoral single long ray (incomplete); ventral rays 7.

Length 250 mm. without caudal.
(Regan and Trewavas.)

Atlantic, Caribbean Sea.

Photomectes flagellatus Parr

1388

Photomectes flagellatus Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. 107, figs. 56 (detail) 55.a (end of barbel).

N. $22^{\circ}43'$ W. $74^{\circ}23'$, 8000 feet. — Regan and Trevaas, Danish Dana Exped. Oceanogr.

Rep., no. 6, March 10, 1930, p. 127, fig. 121a (end of barbel) (compiled).

Depth 7; head $7\frac{4}{5}$. Eye $6\frac{1}{3}$ in head; maxillary with 18 erect teeth; pair of teeth on vomer, 6 or 7 on each palatine; barbel $\frac{4}{5}$ length of head, black, with long terminal filament; terminal half with series of 4 anterior and $1\frac{1}{2}$ (or 2) pairs of lateral tapering branches.

Postocular luminous organ shorter than eye. Lateral photophores 30 or 31 between gill opening and ventral, 12 between ventral and anal. Ventral series

11 between isthmus and pectoral, ¹³⁸⁹ 32
between pectoral and ventral, 11 between
ventral and anal.

D. 18; A. 22; pectoral 1 long ray
nearly $\frac{1}{4}$ of fish, with flat terminal
expansion; ventral rays 7.

Length 280 mm. without caudal.

(Regan and Trewavas.)

Atlantic.

Genus Idiacanthus Peters

Idiacanthus Peters, Monatsber. Akad. Wiss. Berlin, 1876, p. 486. Type

Idiacanthus fasciola Peters, monotypic.

Bathypophis Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 2, 1878, p. 181. Type

Bathypophis ferox Günther, monotypic.

Body greatly elongate. Mouth cleft slightly curved, lower jaw projecting. Premaxillary and lower jaw with single row of unequal, depressible, bicuspid teeth; maxillary with series of minute oblique teeth. Pair of teeth on vomer; short row on each palatine;

2 pairs on basibranchials; no teeth on gill arches. Barbel with basal $\frac{2}{3}$ black, slender; terminal part white or lightly pigmented, thicker, tapering to fine point, bearing anterior and posterior membranous expansions and basally pair of oblique lateral membranes; near base of swollen part short slender white anterior branch, flanked by pair of membranous lobes, terminally to which 1 conspicuous and few

1392

minute luminous bodies. Dorsal rays 54 to 74, long, extend forward nearly to or before ventrals. Anal rays 34 to 49, shorter than dorsal.

Dorsal and anal rays rather wide set, except posteriorly and pair of spiny projections at base of each. No pectoral. Ventral rays 6.

Analysis of species

1393

a¹. Ventral below or behind dorsal origin.

b¹. Ventral well behind dorsal origin,
distant from anal $\frac{1}{2}$ distance from
snout. antrostomus.

b². Ventral little behind dorsal origin,
distant from anal less than $\frac{1}{2}$ their
distance from snout; 22 photophores between
ventral and anal origins. atlanticus.

b³. Ventral below fifth to tenth dorsal ray,
distant from anal at least $\frac{3}{4}$ their
distance from snout; 16 to 22 photophores
between ventral and anal origins. panamensis.

b⁴. Ventral below first to eighth dorsal rays,
distant from anal more than $\frac{1}{2}$ their distance
from snout; 15 to 18 photophores between ventral
and anal origins. fasciola.

a². Ventral well in advance of dorsal. niger.

partly in pairs. obscurus.
f² Second premaxillary fang
generally longer than first,
separated by relatively
narrow interspace; ϕ
photophores evenly spaced.

1394

Idiacanthus antrostomus Gilbert

Idiacanthus antrostomus Gilbert, Proc. U.
S. Nat. Mus., vol. 13, 1890, p. 54. Off

California coast, 603 fathoms. — Goode
and Bean, Oceanic Ichth., 1895, p. 516

(reference). — Jordan and Evermann, Bull.

U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 605

(copied). — Parr, Bull. Bingham Oceanogr.

Collection, vol. 3, art. 3, Dec. 30, 1927, p. 118

(note). — Regan and Trewavas, Danish Dana
Exped.
Oceanogr. Rep., no. 6, March 10, 1930, p. 132

(compiled).

Depth 16 in total length; head 12,
width $2\frac{2}{3}$. Snout $3\frac{1}{2}$ in head from
snout tip; eye $4\frac{2}{3}$, over first third

of maxillary, $1\frac{1}{5}$ in snout, greater than interorbital; maxillary reaches hind edge of gill opening; lower jaw protrudes; upper teeth in 2 groups of 4 or 5, anterior in each very short and others rapidly graduated longer so hind tooth very long; lower lateral teeth at extreme outer jaw edge, anterior inserted farther inward; single small tooth each side of vomer and 2 or 3 posteriorly on palatines; 3 pairs of teeth on tongue directed back; barbel $1\frac{1}{3}$ times head, expanded subterminally; interorbital 6 in head from snout tip. No gill rakers.

gill filaments $\frac{1}{2}$ of eye.

Four rows of minute photophores on abdomen, lateral row extends but short space behind ventral and median series unite to form single row behind ventral.

D. 57, begins well before ventral, space from snout tip $3\frac{1}{3}$ in total length, front rays more widely spaced; A. 35, like dorsal; caudal forked, rudimentary rays extend forward nearly to dorsal and anal; ventral $1\frac{1}{3}$ in maxillary, rays 5 or 6, fin inserted much nearer front of anal than head.

1397

Black, mandible paler. Base
and terminal part of barbel and
caudal fin translucent.
Pacific Ocean.

44286 U.S.N.M.

In 603 fathoms. Albatross Station 2980.
Length 98 mm. Type.

1398

Idiacanthus atlanticus Brauer

Idiacanthus atlanticus Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, Tiefsee-
Fische, 1906, p. 62, text fig. 21 (head).

S. $25^{\circ}25'3''$ E. $6^{\circ}12'4''$, 2000 meters, west
coast of South Africa; S. $26^{\circ}49'2''$ E. $5^{\circ}54'$,
4000 meters; S. $28^{\circ}28'8''$ E. $6^{\circ}13'9''$, 1200

meters. — Barnard, Ann. South African
Mus., vol. 21, pt. 1, June 1925, p. 136

(compiled). — Regan and Trewavas, Danish
Dana Exped. Oceanogr. Rep., no. 6, March
10, 1930, p. 131 (compiled).

Idiacanthus antrostomus (not Gilbert) Parr,

Bull. Bingham Oceanogr. Collection, vol. 3,
art. 2, Dec. 30, 1927, p. 118 (part).

Depth $14\frac{1}{2}$, Eye 7 in head.

Lateral photophores 28 between gill opening to ventral, 38 between ventral and anal; ventral series 40 between isthmus and ventral, 38 (22 to anal origin) between ventral and anal, 18 between anal and caudal.

D. 54, origin shortly before ventral; A. 35; ventral more than twice as distant from snout tip as from vent, white spots on first ray.

Length 204 mm. without caudal.
(Regan and Trewavas.)

South east Atlantic.

Idiacanthus panamensis Regan and Trewavas

Idiacanthus panamensis Regan and Trewavas,
Danish Dana Exped. Oceanogr. Rep., no. 6,

March 10, 1930, p. 131, pl. 6, fig. 2, text fig. 129

(outlines of young). Gulf of Panama N. $7^{\circ}30'$ W. 79°

$19'$, 2500 to 3000 meters; N. $6^{\circ}40'$ W. $80^{\circ}47'$, 800 to

4000 meters; N. $6^{\circ}48'$ W. $80^{\circ}33'$, 1600 to 3600 meters;

N. $7^{\circ}15'$ W. $78^{\circ}54'$, 2500 to 3000 meters.

Idiacanthus antrostomus (not Gilbert) Garman,

Mem. Mus. Comp. Zool., vol. 24, 1899, p. 280

(N. $2^{\circ}34'$ W. $82^{\circ}29'$, 1201 fathoms; N. $7^{\circ}21'$ W. 79°

$5'$, 1832 fathoms).

— Parr, Bull. Bingham Oceanogr. Collection,
vol. 2, art. 4, Oct. 1931, p. 18 (N. $16^{\circ}14'$ W. 99°
 $36'30''$, 625 fathoms; N. $11^{\circ}5'$ W. $89^{\circ}20'45''$, 300 fathoms).

Depth 18 to 25; head 12 to 15.
Snout $4\frac{1}{8}$ in head from upper jaw
tip; eye $5\frac{3}{8}$ to 8, 2 in snout;
maxillary extends 4 eye diameters behind
eye, length but slightly less than
head from snout tip; barbel $6\frac{1}{4}$ in
body without caudal, swelling on
anterior filament rather small;
interorbital low.

Postocular luminous organ small
photophore eye diameter behind eye.
Lateral photophores 22 to 24 between
gill opening and ventral, 30 to 34
between ventral and anal; ventral
series 32 to 36 between isthmus and
ventral, 29 to 36 (16 to 22 to anal
origin) between ventral and anal,
16 to 21 between anal and caudal.

D. 54 to 67; A. 34 to 39; ventral
inserted below fifth to tenth dorsal
ray, distant from snout $2\frac{2}{3}$ to 3
times in fish, slightly more (or less)
than space from anal origin; ventral

length $1\frac{1}{3}$ in head.

Conspicuous bluish white streak below postocular luminous organ, extends forward below eye. On body 3 longitudinal series (2 posteriorly) of bluish white patches, 1/2 lower series alternating with lateral and ventral photophores. Bases of caudal rays densely covered with minute yellowish bodies. Oblong yellow body in lower caudal lobe. First ventral ray black, with white patches. Length 298 mm. without caudal.

(Regan and Trewavas.)

Gulf of Panama.

I diacanthus fasciola Peters

I diacanthus fasciola Peters, Monatsb.
Akad. Wiss. Berlin, Dec. 1876 (1877),
p. 846. Pacific Ocean, north of Australia,
in E. Long. 117° , both at surface; north
of New Guinea h. Lat. $1^{\circ}4'5''$ E. Long. 136°
 $3'6''$. — Günther, Rep. Voy. Challenger,
vol. 22, 1887, p. 215 (copied). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
Tiefsee - Fische, 1906, p. 60, text fig. 17 —
— Weber, Siboga Exped., vol. 57, Fische, 1913,
p. 15 (Halmahera Sea, in 1000 meters). —
Weber and Beaufort, Fishes Indo-Austral.
Archipelago, vol. 2, 1913, p. 108, fig. 37 (Halmahera Sea).
Bingham Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, p. 116, text fig. 6 (end of E)

Idiacanthus fasciola Peters

Idiacanthus fasciola Peters, Monatsb.
Akad. Wiss. Berlin, Dec. 1876 (1877),
p. 846. Pacific Ocean, north of Australia,
in E. Long. 117° , both at surface; north
of New Guinea h. Lat. $1^{\circ} 4' 5''$ E. Long. 136°
 $3' 6''$. — Günther, Rep. Voy. Challenger,
vol. 22, 1887, p. 215 (copied). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
Tiefsee - Fische, 1906, p. 60, text figs. 17-
20, 22, pl. 4, figs. 2-3 (off Sumatra,
below Chagos Archipelago and Seychelles,
in 594 to 2500 meters) x — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3, art. 2,
Dec. 30, 1927, p. 116, text fig. 6 (end of)

barbel) (N. $23^{\circ}55'$ W. $77^{\circ}17'$, 6000 feet;
 N. 24° W. $77^{\circ}47'$, 6000 feet; N. $32^{\circ}24'$ W. 64°
 $29'$, 10000 feet). — Regan and Trewavas,
 Danish Dana Exped. Oceanogr. Rep., No. 6,
 123 (barbel)
 March 10, 1930, p. 129, figs. 125 (outline),
 128 (outlines of young)
 (type of Saccanthus ferox; off southern
 Spain; off Cape Blanco; south east of Bermuda;
 east of Lesser Antilles; north east of Lesser
 Antilles; mid north Atlantic; east of Bermuda;
 south of Newfoundland; north of Lesser Antilles;
 north of Porto Rico; south of Virgin Islands; west
 of Canaries; north of Cape Verde Islands; north
 east of Guiana; west of St. Lucia; off Dominica;
 east of Barbuda; off St. Croix; Gulf of Panama;
 west of Jamaica; north west of Cuba; Bahamas;
 near Martinique; east of Cape Hatteras; Azores;
 to 5000 meters).

Family Idiacanthidae

- 1405
- Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (compiled).
— Beebe, Zoologica N.Y. Zool. Soc., vol. 12, no. 1, April
30, 1929, p. 13 (N. 39° 15' W. 72°, 600 fathoms).

Bathyopsis ferox Günther, Ann. Mag. Nat.
Hist., ser. 5, vol. 2, 1878, p. 181. Middle of
North Atlantic, in 2750 fathoms. —

Goode and Bean, Oceanic Ichth., 1895,
p. 129, pl. 40, fig. 151 (compiled). —

Jordan and Evermann, Bull. U.S. Nat. Mus., no. 47, pt. 1, 1896, p. 605 (compiled).
— Gilchrist, Marine Biolog. Rep. South Africa,
vol. 1, 1913, p. 66 (South African Sea). —

Barnard, Ann. South African Mus., vol.
21, pt. 1, June 1925, p. 136 (on Gilchrist). —

Idiacanthus ferox Günther, Rep. Voy. Challenger,
vol. 22, 1887, p. 216, pl. 52, fig. d (type of
Bathyopsis ferox).

Idiacanthus aurora Waite, Australian¹⁴⁰⁶
Antarct. Exped. Sci. Rep., ser. C., Zool.
bot., vol. 3, pt. 1, June 30, 1916, p. 53,
text fig. 11 (head above), pl. 5, fig. 1.
Twenty-five miles northward off
Macquarie Island, in 636 to 1450
fathoms. — Archey, New Zealand Journ.
Sci. Techn., vol. 5, 1922, p. 296.

Depth 19 to 27; head 15 to 18.

Snout 4 in head from snout tip; eye
5 to 7, 2 in snout; maxillary extends
4 eye diameters behind eye, very
slightly less than head from snout tip;
barbel $6\frac{1}{2}$ in body without caudal,
anterior filament with conspicuous

swelling; interorbital low.

Postorbital luminous organ small photophore. Lateral photophores 21 to 25 between gill opening and ventral, 30 to 36 between ventral and anal; ventral series 33 to 36 between isthmus and ventral, 30 to 36 (15 to 18 to anal origin) between ventral and anal, 14 to 18 between anal and caudal.

D. 54 to 74; A. 38 to 49; ventral $1\frac{1}{5}$ in total head origin below first to eighth dorsal ray.

Small faint white patch below postocular luminous organ. Three longitudinal series of similar patches along body, invisible to naked eye. Knot of similar tissue on upper surface of caudal peduncle. Oblong yellow body, with smaller one, in lower caudal lobe. First ventral ray black, with white patches.

76857 U.S.N.M.

Albatross Station 2791.

Length 168? mm., tail broken.

84550 U.S.N.M.

Albatross Station 2751.

Length 190 mm.

84587 U.S.N.M.

Albatross Station 2663.

Length 158 mm.

Idiacanthus niger Regan

Idiacanthus niger Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 13, 1914, p. 14, New Zealand.

Brit. Antarctic Terra Nova Exped., Zool., vol. 1, no. 1, 1914, p. 14, pl. 10, fig. 2 (type).

— Archey, New Zealand Journ. Sci. Techn., vol. 5, 1922, p. 295 (New Zealand, from

— Regan and Trewavas, Danish Dana Exped. Oceanogr. Rep., no. 6, March 10, 1930, p. 128, fig. 124 (type). — Norman, Discovery Rep., vol. 2, 1930, p. 315, fig. 25 (barbell) (S. 33° to 45° E, 9° to 17° W, 24°, 93 to 1000 meters).

(note). X

Idiacanthus retrodorsalis Thompson,

Proc. U. S. Nat. Mus., vol. 50, 1916, p.

pl. 4, fig. 3.
462, Off Lota, Chile, in 677 fathoms.

Idiacanthus niger Regan

Idiacanthus niger Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 13, 1914, p. 14, New Zealand.

Brit. Antarctic Terra Nova Exped., Zool., vol. 1, no. 1, 1914, p. 14, pl. 10, fig. 2 (type).

— Archey, New Zealand Journ. Sci. Techn., vol. 5, 1922, p. 295 (New Zealand, from grouper's stomach).

— Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 30, 1927, p. (note). *

Idiacanthus retrodorsalis Thompson,

Proc. U. S. Nat. Mus., vol. 50, 1916, p.

pl. 4, fig. 2.
462, Off Lota, Chile, in 677 fathoms.

Depth 24, length 14 to 15. Snout 4 in head; eye 7 to 8, $1\frac{3}{4}$ in snout; maxillary extends $2\frac{1}{2}$ eye diameters behind eye, slightly less than head from snout tip; barbel $7\frac{1}{4}$ in body without caudal; interorbital low. ♂

Postocular luminous organ very small. Lateral photophores 28 between gill opening and ventral, 35 between ventral and anal; ventral series 39 or 40 between isthmus and ventral, 35 (20 or 21 to anal origin) between ventral and anal, 17 between anal and caudal.

D. 55 to 60; A. 36 to 38; ventral well before dorsal, distant from anal origin $\frac{4}{5}$ their space from snout end.

Length 380 mm. without caudal.
(Regan and Trewavas.)
Off New Zealand, Chile.